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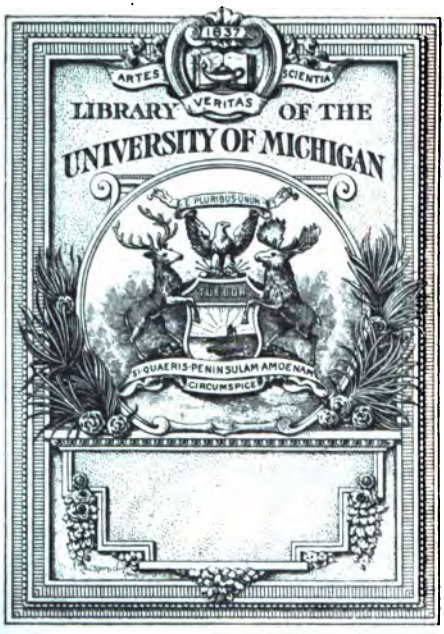
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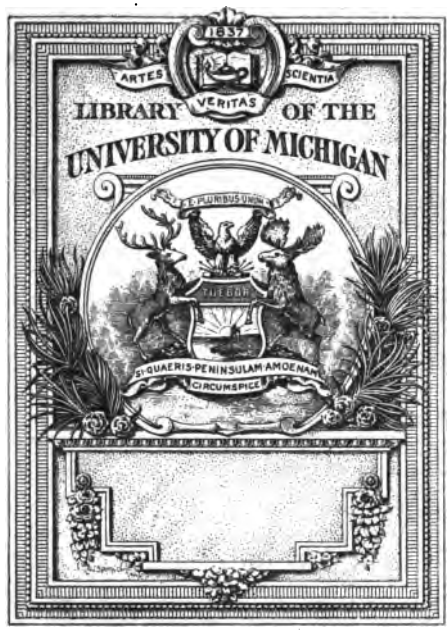
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TRANSACTIONS

OF THE

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THIRTY-SIXTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD AT

COLUMBUS,

June 14th, 15th, and 16th, 1881.

COLUMBUS, O.:
1882.

THIRTY-SIXTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD AT

COLUMBUS, JUNE 14TH, 15TH, AND 16TH, 1881.

AFTERNOON SESSION.

In the absence of the retiring President, the Society was called to order by Vice-President John Davis, of Dayton, who introduced the President-elect, Dr. E. H. Hyatt, of Delaware.

After prayer, by the Rev. Dr. Bailey, Mayor Peters was presented, who delivered a carefully prepared address of welcome.

The reports of the Secretary and the Treasurer were read and referred to the Finance Committee.

Filling Committees: Committee on Admissions was filled by the appointment of Drs. W. S. Battles, A. Follett and Jonathan Morris. Committee on Medical Societies, Drs. A. T. Speer, S. C. Dumm and Toland Jones. Judicial Council, Drs. W. M. Beach, B. B. Leonard and C. S. Muscroft. Finance Committee, Drs. W. W. Jones and T. A. Reamy.

The report of the Committee on Codification and Revision of the Constitution was presented, and referred to the Judicial Council.

Dr. S. C. Ayres read his report on Ophthalmology and Otology.

Dr. J. C. Kennedy presented his report on Insanity, which was read by the Secretary.

Dr. G. W. Maris presented a volunteer paper on Alcohol, which was referred to the Publication Committee without reading, owing to the inability of the author to make himself heard.

Dr. N. P. Dandridge read a volunteer paper on Exsection of a Rib in Empyema.

In the absence of other papers, the matter of the new Constitution was taken up, during the discussion of which the Society adjourned.

The evening session was entirely occupied by the discussion of the proposed Constitution.

SECOND DAY—MORNING SESSION.

President Hyatt called the Society to order. The Judicial Council reported back the proposed Constitution and By-Laws, unanimously recommending their adoption. After considerable debate, a motion prevailed to refer the matter to the committee, with instructions to publish, together with the present Constitution and its amendments, in order that the Society may take final action on it next year.

Dr. Starling Loving read his report on the Etiology of the Diseases of the Mississippi Valley.

Dr. Julia W. Carpenter read a volunteer report on Optical Headaches.

Adjourned.

AFTERNOON SESSION.

Minutes of previous sessions read and approved.

Election of officers was next in order and resulted as follows:

[illegible]

[illegible]

[illegible]

THIRD DAY—MORNING SESSION.

Minutes read and approved.

On motion of Dr. C. P. Landon, a committee was appointed by the President to express the sentiment of the Society in regard to the entertainment at the Asylum last night, and the management of the Asylum by the Superintendent and Trustees. The committee, consisting of Drs. Landon, Baldwin and Herrick, reported as follows:

Resolved, 1st, That this Society hereby expresses, with pleasure, its thanks for the entertainment at the Asylum for Feeble-minded Youths, and heartily commends Dr. Doren for the efficient management manifest in all the details of his arduous duty. *2d.* That the co-operation and support of the Trustees and Legislature is worthy of the approval of the State of Ohio.

These resolutions were unanimously adopted.

Dr. D. N. Kinsman read his report on Sanitary Science.

Dr. Joseph Ransohoff read a volunteer paper on Some Rare Forms of Syphilis.

The Committee on the President's Address made the following report:

The Committee most respectfully report, that it has been favorably impressed in regard to the manner and substance of the address, and that there are three points contained in it which demand the special attention of this Society, viz: Medical education; merits of new remedies with their various pharmaceutical preparations; and, lastly, a change as to the manner of issuing the Transactions of the Society.

In regard to the first named topic, we would express our deep-felt convictions that, whilst the subject of medical education may be deemed a trite one, it should continue to receive the earnest and thoughtful consideration of the medical profession, until that high standard in this respect has been attained which is by almost every one conceded to be right. Especially would we call attention to that part of the address which pertains to a suitable preliminary education. Whilst your committee has no formulated recommendation, or resolutions, to offer upon that point, yet your careful attention is called to the subject.

In regard to the subject of new remedies and pharmaceutical preparations, so ably and exhaustively treated of in the Address, we would recommend the studious attention of every member of the Society, and whilst we are not so fully competent to express an opinion upon this point as others, who have more critically examined it, yet we believe that there are matters of vital importance in the subject to the profession, and that at some time in the near future, if not now, some definite action may be called for in reference to it.

We would close this brief report by calling the attention of the Society to that part of the Address which refers to the change in the mode of publishing the Transactions.

The plan proposed is to discontinue the issuing of the volume of Transactions as heretofore, and instead to have the papers published in the medical journals. Thinking well of this suggestion, and in order that still more definiteness should be given as to the outline of the above named plan, we called a conference with our worthy and able Secretary upon this subject, which has resulted in the following proposition from him, which we think will fully satisfy the demands of the President's recommendation, and thus advance very materially the best interest of the Ohio State Medical Society.

Proposition: I agree to publish a Monthly Journal—to be known as the OHIO MEDICAL JOURNAL—to be the journal of the Ohio State Medical Society, of not less than forty-eight pages of reading matter, with entirely new type, &c., for one dollar per annum for each paid-up member of this Society. I will guarantee a monthly circulation of not less than 3,000 copies. The JOURNAL shall be open to members of the society for the legitimate discussion of all scientific or legislative questions that may come before the Society, including matters pertaining to medical legislation, State Board of Health, Epileptic Asylum, etc., etc. Especial attention will be paid to giving synopses of the Transactions of other State Societies.

An *Editorial Staff* will be organized, by securing Associate Editors at Cincinnati, Cleveland, Toledo and Dayton: said Associate Editors to be subject to the approval of a committee to be appointed by the State Society.

These Associate Editors will report items of news from their respective localities, society proceedings, etc. They will also endeavor to secure papers for publication in the JOURNAL, and, in general, protect and conserve the inter-

ests of the Society. They will also have a general oversight of articles sent for publication, as well as of the advertising pages.

Respectfully, J. F. BALDWIN.

We endorse the above proposition of Dr. Baldwin as part of our report, and recommend its adoption.

W. H. PHILIPS,
J. N. BEACH, } *Committee.*
ISAAC KAY.

Dr. H. J. Herrick moved that the proposition contained in the Report, as to the publication of the *Transactions* in the form of a journal, be accepted. This elicited considerable discussion, *pro* and *con*, during which the Secretary arose, and stated that he had made this proposition for the good of the Society: he did not see how it could benefit him in any way commensurate with the labor and expense involved, while it might entail upon him serious pecuniary loss. He had offered to give the Society, and at no increased expense to its members, a circulation for its papers of three thousand, instead of about as many hundreds, as heretofore; he had offered the members a medium by which they could communicate with each other, and by which chairmen of committees could appeal, not to members of their committees alone, but to the entire membership throughout the State, in aid of any important legislative or other enterprise; he had proposed to place in the hands of the Society, a means of not only diffusing a knowledge of its work throughout the profession, but also for organizing itself into a vital power whose influence should be felt in politics, and acknowledged by party leaders. But opposition had sprung up; his honesty had been questioned, and his motives misconstrued; and he would therefore withdraw his proposition.

Leave to withdraw his proposition was however refused, and the vote being called for, the motion of Dr. Herrick was carried unanimously.

Dr. N. H. Sidwell read a volunteer paper on Our Profession.

Dr. Reuben A. Vance also read a volunteer paper, on Syphilis, which was discussed at some length.

Motion was made that the President appoint a committee of five, to act in the selection of the associate editors of the Journal. *Carried.* Committee appointed: Drs. W. M. Beach, John Davis, H. J. Herrick, Joseph Ransohoff, and W. T. Ridenour.

CONSOLIDATED REPORT OF COMMITTEE ON ADMISSIONS.

The following named persons were by vote admitted to the Society. Those marked with a * have paid their fees and completed their membership.

NAMES.	RESIDENCE.	VOUCHERS.
Bain, F. D.	Kenton	W. H. Philips, C. H. Reed.
*Barton, F. J	Zanesville	J. W. Hamilton, T. A. Reamy.
*Beverley, P. F.	Columbus	T. W. Jones, J. W. Hamilton.
Black, F. M.	Darbyville	F. C. Tipton, E. B. Pratt.
Bradford, C. R	Mt. Liberty	J. W. Russell, P. Pickard.
*Brayton, F. W.	Carey	C. A. Kirkley, G. A. Collamore.
*Christopher, W. H	Van Wert	S. B. Hiner, J. A. Hines.
*Clark, D. M.	Columbus	A. Follett, Starling Loving.
*Cooper, Albert	Columbus	J. W. Hamilton, J. W. Russell.
*Covington, P. D.	Bellefontaine	B. B. Leonard, J. Morris.
*Crane, A. M.	Kilbourne	J. F. Baldwin, Starling Loving.
*Dawson, J. O.	Westerville	C. P. Landon, D. W. Coble.
*Dunlap, C. O.	McArthur	D. Halderman, T. A. Reamy.
*Emery, W. H.	Mt. Sterling	E. B. Pratt, Jos. Ransohoff.
*Fisher, H. M.	Akron	W. J. Underwood, W. S. Hough.
*Follett, G. P.	Columbus	Starling Loving, T. W. Jones.
*Fulton, C.	Bucyrus	W. J. Kelley, W. B. Carson.
*Granger, F. M	Russell Station	R. C. Ross, C. S. Muscroft.
Hardy, Neil	Up. Sandusky	J. E. Whitman, — Pomerine.
*Hipple, J. R.	Waldo	B. W. Davis, A. B. McMurray.
*Hough, C. A.	Waynesville	L. Woodruff, J. Morris.
*Jacobs, W. C.	Akron	T. A. Reamy, W. J. Underwood.
Jones, H. E.	Circleville	T. C. Tipton, E. B. Pratt.
*Kelley, W. J.	Galion	J. W. Hamilton, J. Morris.
*Kennedy, C. P.	Bellefontaine	B. B. Leonard, H. C. Pearce.
*King, C. W	Columbus	Starling Loving, T. W. Jones.
Kreiger, G. L	Lebanon	N. H. Sidwell, T. A. Reamy.
*Lee, M. F	Columbus	W. H. H. Nash, D. N. Kinsman.
*Leever, J. C.	Defiance	T. H. Kearney, E. B. Harrison.
Loving, Jos. S.	Columbus	A. Follett, T. W. Jones.
*McIntyre, W.m	Millville	E. H. Hyatt, S. W. Fowler.
*Markel, I. F.	Mifflin	E. V. Kendig, X. C. Scott.
*Marshall, O. W.	Jeffersonville	E. B. Pratt, D. A. Mann.
*Mattoon, F. N	Plain City	D. Halderman, S. W. Fowler.
*Montgomery, H. B. B.	Gilboa	Jos. Ransohoff, T. A. Reamy.

NAMES.	RESIDENCE.	VOUCHERS.
*Myers, J. A	Shelby	H. J. Herrick, W. H. Sykes.
Olmstead, D. S	Millersburg	J. E. Whitman, W. F. Barnes.
*Powell, W. S	Defiance	J. M. Shoemaker, E. B. Harrison.
*Quinn, A. T	Wilmington	N. H. Sidwell, T. A. Reamy.
*Rankin, T. W	Kirkersville	J. W. Hamilton, D. Halderman.
*Reed, C. A. L	Hamilton	C. Falconer, J. F. Baldwin.
Rodebaugh, H. A	Reynoldsburg	C. P. Landon, D. Halderman.
*Row, Geo. T	Circleville	A. P. Courtright, T. A. Reamy.
*Sapp, C. E	Gambier	J. W. Russell, P. Pickard.
*Skinner, S. W	Toledo	G. A. Collamore, C. A. Kirkley.
*Snyder, C	West Jefferson	D. Halderman, J. N. Beach.
Stewart, S. G	Centreville	J. S. Beck, J. Davis.
*Stockton, Geo	Columbus	J. F. Baldwin, W. M. Beach.
*Strain, A. J	London	L. Woodruff, W. M. Beach.
*Sturgeon, S. W	Ada	E. V. Kendig, W. W. Jones.
*Sylvester, J. E	McArthur	D. Halderman, T. A. Reamy.
*Thacker, L. G	Defiance	G. A. Collamore, S. B. Hiner.
*Thomson, J. C	Rollersville	C. E. Beardsley, R. H. Rice.
*Trimble, R. T	New Vienna	R. C. Russ, S. C. Ayres.
*Vance, R. A	Cincinnati	D. D. Bramble, J. F. Baldwin.
*Whistler, H	New Market	R. C. Russ, S. C. Muscroft.
Winslow, J. W	Spring Mount'n	J. W. Hamilton, —— Pomerine.
Wise, D. B	Mt. Eaton	J. E. Whitmar, W. F. Barnes.

The Judicial Council reported that the next meeting of the Society would be held at Columbus, commencing on the second Tuesday of June, 1882, at 2 o'clock P. M.

The Committee on Finance made the following report, which was adopted: The Finance Committee have examined the reports of the Secretary and Treasurer, and find them correct. We recommend that the salaries of the Secretary and Treasurer remain as heretofore ($50), but that the Treasurer be instructed to apply the interest from the funds now in his hands—over $1,200—to the increase of his salary. We also recommend that the annual assessment be one dollar.

D. HALDERMAN, *Chairman.*

Society adjourned to meet at 2 o'clock P. M.

AFTERNOON SESSION.

Dr. D. D. Bramble read a volunteer paper on Certain Questions in the Mechanics of Bones.

Motion was made that Dr. D. N. Kinsman take the place

of Dr. A. Andrus, in the Committee on Medical Law, the other members to continue. *Carried.*

On motion of Dr. J. W. Hamilton, the report of the Finance Committee was reconsidered, and the Treasurer's salary increased to $100; the Treasurer being instructed to invest the surplus funds in his hands to the best advantage, and place the receipts to the credit of the Society.

The following papers were read by title, and referred to the publication Committee: Eucalyptus Globulus, by Dr. D. J. Snyder; Heredity of Acid Stomach, by Dr. G. S. Franklin; Report on Gynecology, by Dr. M. C. Cuykendall.

The minutes were then read and approved, and the Society adjourned.

J. F. BALDWIN, *Sec'y.*
STARLING LOVING, *Pres't.* C. A. KIRKLEY, *Ass't Sec'y.*

STANDING COMMITTEES.

Committee on Publication.—H. G. Landis, J. B. Schueller, R. M. Denig, J. M. Wheaton, J. F. Baldwin.

Executive Committee.—T. C. Hoover, W. H. H. Nash, J. B. Schueller, S. H. Steward, A. Cooper.

Judicial Council.—W. J. Scott, W. T. Ridenour, John Davis (Dayton), W. H. Mussey, H. J. Donahoe.

Committee on Finance.—D. Halderman, D. D. Bramble, A. Hurd, C. E. Beardsley, E. W. Howard.

Committee on Medical Societies.—E. Pearce, Jr., S. S. Thorn, G. S. Franklin, W. S. Constant, Joel Pomerine.

Committee on Constitution.—J. F. Baldwin, J. B. Thompson, T. W. Jones.

Committee on Obituaries.—Isaac Kay, W. C. Chapman, Jonathan Morris.

Committee on Medical Law.—John Bennitt, A. Dunlap, W. J. Scott, B. B. Leonard, D. N. Kinsman.

Committee on Admissions.—E. Stanley, N. H. Sidwell, Jonathan Morris, J. F. Gabriel, H. G. Landis.

SPECIAL COMMITTEES.

a Joseph Ransohoff, M. D., Cincinnati: "Progress of Surgery."

b N. P. Dandridge, M. D, Cincinnati: "Surgical Diseases of the Genito-Urinary Organs."

c Jas. Larimore, M. D., Newark: "Acute Peritonitis, Localized and General."

d H. G. Landis, M. D., Columbus: "Progress of Obstetrics and Gynecology."

e W. C. Chapman, M. D., Toledo: "Present Status of Therapeutical Inquiry."

f D. H. Brinkerhoff, M. D., Fremont: "Exanthemata."

g H. A. Tobey, M. D., Dayton: "Report on Insanity."

h Reuben A. Vance, M. D., Cleveland: "Surgery of the Arteries."

i S. S. Thorn, M. D., Toledo: "Abscesses of Perineum."

j John A. Murphy, M. D., Cincinnati: "Functional Diseases of the Nervous System."

k D. N. Kinsman, M. D., Columbus: "The Etiology of Consumption."

l E. B. Pratt, M. D., Mt. Sterling: "Treatment of Inflammation of the Knee Joint."

m C. A. Kirkley, M. D., Toledo: "Epithelioma of the Cervix Uteri."

n Geo. A. Collamore, M. D., Toledo: "Report on the Progress of Medicine."

o Wm. Morrow Beach, M. D., London: "Achievements and Failures in the Medical Art."

p Sidney Norton, M. D., Columbus: "The Contamination of Drinking Water, and What Constitutes Impurities of Drinking Water."

q Henry G. Cornwall, M. D., Columbus: "Cystic Tumors of the Orbit, with a Case."

r A. M. Bleile, M. D., Columbus: "Digestion."

s Geo. W. Garrison, M. D., Utica: "Cancer."

t W. H. Christopher, M. D., Van Wirt: "Practical Microscopy."

u S. C. Ayers, M. D., Cincinnati: "Retinitis Albuminurica," and "Granulations of the Middle Ear."

v W. W. Seeley, M. D., Cincinnati: Report on Otology.

w W. B. Davis, M. D., Cincinnati: Report on Mat. Med. and Ther.

x D. Little, M. D., Logan: "Medical Electricity."

y W. B. Hedges, M. D., Delaware: "Treatment of Pneumonic Fever."

z H. B. B. Montgomery, M. D., Gilboa: "Medical Ethics."

a[1] Joseph Eichberg, M. D., Cincinnati: "Report on the Progress of Laryngology."

b[1] Thad. A. Reamy, M. D., Cincinnati: "Uremia and its Treatment."

c[1] Chas. P. King, M. D., Newark: "Trichina Spiralis."

DELEGATES TO AMERICAN MEDICAL ASSOCIATION.

J. T. Whittaker, Thad. A. Reamy, John A. Murphy, N. P. Dandridge, D. D. Bramble, H. J. Herrick, W. J. Scott, M. C. Cuykendall, R. A. Vance, X. C. Scott, A. C. Miller, C. A. Kirkley, G. A. Collamore, W. J. Conklin, S. S. Thorn, John Davis, T. L. Neal, H. J. Donahoe, J. B. Rice, Geo. Mitchell, J. D. Robinson, J. W. McMillen, J. W. Russell, T. G. McEbright, E. H. Hyatt, R. L. Sweney, W. H. Philips, T. C. Minor, J. N. Southard, Dan. Milliken, C. C. Hildreth, H. Culbertson. Jas. Larimore, J. W. Hamilton, H. G. Landis, A. Follett.

DELEGATES TO THE KENTUCKY STATE MEDICAL SOCIETY.

G. S. Franklin, W. W. Dawson, W. H. Mussey.

TO THE INDIANA STATE MEDICAL SOCIETY.

B. B. Leonard, A. Dunlap, John H. Rodgers.

TO THE MICHIGAN STATE MEDICAL SOCIETY.

S. F. Forbes, C. H. Reed, M. C. Cuykendall.

TO THE WEST VIRGINIA STATE MEDICAL SOCIETY.

E. Pearce, Jr., Jas. McClure, J. P. Cline.

TO THE PENNSYLVANIA STATE MEDICAL SOCIETY.

J. C. Hubbard, L. M. Whiting, L. Firestone.

OHIO STATE MEDICAL SOCIETY.

At the Seventeenth Annual Session of the Ohio State Medical Society the following resolution was adopted:

Resolved, That the publication of any address, prize essay, or other paper by this Society, is no evidence of its endorsement of the sentiments therein contained.

REPORT ON

Ophthalmology and Otology.

S. C. AYRES, M. D., CINCINNATI.

As there has been no report on Ophthalmology and Otology since that of Dr. D. B. Smith, of Cleveland, made at the meeting of this Society in 1878, I shall take the liberty of going back to that date and giving you a hasty resume of practical points most interesting and valuable to the practitioner. Much might be said which would be out of place here, and I shall try to confine myself to practical points. You will pardon me if I diverge from the established custom of a simple statement of facts, and give you my personal observations on some things, particularly the therapeutics of eye diseases.

Ophthalmology is more ardently studied than ever. Every year shows some substantial advancement in physiology, pathology, and therapeutics. In Europe and this country, eye diseases are being treated more successfully than ever, and several new and improved operations are now in vogue. The literature on the subject is very extensive, and the journals, in French, German and English, are a credit to the profession.

Eserine:—Within the past three or four years, Eserine has come into very general use among specialists. It has been both a disappointment and a success, therapeutically considered. The high hopes which had been raised as to its influence on glaucoma, have been disappointed. Knapp reports one case of acute glaucoma cured, but says that its influence on sub-acute and chronic glaucoma has been either negative or positively injurious. Dr. Landeberg, of Philadelphia, in summing up his observations, says: "I

must regard eserine to be not only an unreliable and, in most cases, worthless remedy in glaucoma, but also a very dangerous one. which, by its primary results, may lull the patient, as well as the attending physician, into a delusive security, endangering thus the favorable chances of another more efficacious therapeutic action." The general sentiment, in my judgment, is that this remedy is useful only in the acute form of glaucoma. Here it can be used with great advantage to control the disease until an iridectomy can be made. It becomes then, in the hands of the practitioner, who is most likely to see the case first, a most valuable agent. If he will not make the iridectomy himself, (which after all is the proper thing to do) he can control the disease until his patient can reach a specialist who will operate. Its effects must be watched and the pupil kept moderately contracted. A judicious use of this remedy would save many eyes which reach the specialist in a hopeless condition.

In sub-acute and chronic glaucoma, eserine is practically useless. In one chronic case, I saw its use followed by a violent exacerbation of all the previous symptoms. Its instillation seldom produces any constitutional disturbance. In two cases, however, alarming symptoms followed. Both were cases of chronic glaucoma. One a healthy German, where the eserine was used at first with very favorable influence on tension and vision. The next day was appointed for the operation of iridectomy. A second instillation was made about half an hour before the appointed time. In a few moments he began to feel very badly, when I saw his entire body covered with a cold, clammy sweat, his countenance very pinched, and he was to all appearances like one in the collapse of cholera. Stimulants were administered freely, and friction applied to the skin and he soon recovered. The second case was very much like the first, with this exception that a very much smaller amount of eserine was used and yet the same prostrating effects followed. There was undoubtedly an idiosyncracy in these cases, and they must be very exceptional for they are the only ones in a large number of cases. I have seen it used in infants, in delicate children, and in aged persons, and with those exceptions it has produced no untoward results.

If eserine has disappointed its warm advocates in the treatment of glaucoma, it has more than compensated for this by the success which has attended its use in the treatment of corneal affections. It has here achieved

triumphs which were unlooked for by those who for years had looked upon sulphate of atropine as the sheet anchor in such troubles. It has produced, or is producing, a revolution in the treatment of keratitis, and it would seem that V. Wecker's statement that "Eserine will replace the atropine," is likely to come true.

Dr. Williams, of Boston, says that it is efficient in keratitis, corneal ulcer, kerato-conus, beginning sympathetic irritation, and paresis of accommodation. Dr. Bull, of New York, from his experience, says that photophobia of phlyctenular ophthalmia is more relieved by eserine than atropine. I have used the sulphate of eserine quite extensively in corneal inflammations, and I must say that the more I use it the more do I appreciate its good qualities. It seems to act well in all the various forms of corneal affection, as in phlyctenulæ, in superficial keratitis, in deep, sharply defined ulcers, etc. If you will permit me, I will, in the most succinct manner possible, give you a history of a few typical cases:

Mrs. K., aged 30; superficial keratitis, slight diffuse haziness of cornea, lower and inner quadrant more involved; great photophobia, conjunctiva intensely injected. She had been suffering about three weeks and doing all this time had used atropine, from which her pupil was widely dilated. Eserine sulph., gr. j. ad aq. ℥ss, was ordered to be instilled into the eye three times a day. She was also ordered quinine, two grains three times a day. In two days she was decidedly better, and in six days was practically well. The pupil was kept contracted for a few days, and then the use of the eserine was suspended. The cornea cleared off wonderfully fast and she regained good vision.

Mr. K., aged 60; superficial ulceration of cornea, at outer margin. Cornea was extensively infiltrated around the ulcer and there was considerable photophobia and pain. Began the use of eserine twice a day, and its effects were soon quite manifest. The eye became more tolerant of light, the swelling and injection of the conjunctiva began to disappear, and the infiltration of the cornea around the ulcer to clear up, and in ten days he was ready to be discharged.

A., aged 2; sharply defined ulcer on outer portion of left cornea; eye painful and difficult to examine; child strumous but apparently well nourished. Eserine (gr. ss. ad aq. ℥ss.) was instilled twice a day. Its good influence here was prompt and satisfactory, and in about

a week the child was up running around as usual. The photophobia had disappeared, but there still remained a thin macula. In this case quinine was ordered at first, and followed by dialysed iron as soon as the more violent symptoms subsided. I will also say that two or three times atropine was used at night when the child seemed to be suffering from pain in the eye. This was invariably followed by relief. In a good many cases I have used atropine with eserine in this manner, for its anodyne effect. The effect of eserine on the healthy iris is to produce an unpleasant sensation of contraction, or drawing. This will follow a single instillation, and it is only reasonable to think that this feeling may be greatly increased by the continued use of the myotic.

Duboisine:—Two new mydriatics have been recently introduced, Duboisine and Homatropine Hydrobromate. Duboisine is a very valuable addition to the remedial agents used in the treatment of eye diseases. Its action is much more prompt and energetic than that of atropine, but it is also more transient. So far as my observation goes, it is not irritating, or only exceptionally so, and the irritation passes off very soon. It dilates the pupil promptly, in from five to ten minutes, and produces paralysis of accommodation in from ten to thirty minutes. It would not, however, do to depend on the accommodation being paralyzed so quickly, in the ordinary run of cases one would have to test. It is better to use the duboisine three times at intervals of half an hour, and then half an hour after the last instillation, to make the test. This allows an hour and a half after the first instillation, which is short enough, for in a good many cases a much longer time will have to be allowed.

Dr. S. D. Risley, of Philadelphia, in a very interesting paper on Duboisine, published in the *Am. Jour. Med. Sciences*, April '80, says that from a large group of cases of anomalies of refraction, he found that the average duration of atropine was 5¼ days and that the continuance of the paralysis of accommodation was from one to sixteen days. After he had obtained the duboisine, he found that the time was much shortened and averaged 3¼ days. This of course was a very satisfactory showing in favor of the new remedy, as it shortened the period of discomfort which naturally follows the use of a mydriatic. It is certainly a reliable remedy for testing anomalies of refraction, and very promptly took the place of atropine. It is also a deservedly popular remedy in

treating all diseases requiring mydriasis. It is less irritating than atropine and can be used with equal safety. It is a well known fact observed by all specialists, that now and then atropine causes a violent inflammation of the conjunctiva and eye-lid. The latter become puffy and edematous, and a condition of the skin resembling eczema follows. Occasionally granulations of the follicular form will develop, which are extremely obstinate to treat. In a number of these cases where atropine causes irritation I have seen duboisine act kindly, not causing the slightest reaction. We are fortunate, then, in having a reliable mydriatic like duboisine to fall back on when we cannot use the old time-honored remedy, atropine. It is generally prescribed in a gr. iv. aqueous solution, but some prefer to use it not stronger than gr. ij. I have never seen any unpleasant effects follow its use in the stronger solution. I have used it in iritis, irido-choroiditis, ulceration of the cornea, and in fact in all diseases requiring a mydriatic, and found its effects satisfactory.

Homatropine Hydrobromate is the latest addition to the mydriatics, and in many respects possesses very valuable qualities. It produces prompt dilatation of the pupil and paralysis of accommodation, and its effects pass off very quickly. I have examined a large number of cases of ametropia, under its influence, and am prepared to say that it has given good satisfaction. Its principal valuable quality is that its effects pass off in from ten to thirty hours, and accommodation is then regained. If the examination is made in the forenoon, patients are always able to see to read the next morning, and in a few cases, the same evening. Its effects upon the accommodation are so transient that one must watch his patient and make the examination when the paralysis is at its height. It is not likely to come into general use for the treatment of diseases of the eye, but will be used exclusively in the examination of anomalies of refraction, and for diagnostic purposes. It is very expensive, and solutions seem to lose their strength rapidly, so that they must be made fresh every day or two. It is not at all irritating to the conjunctiva, and not likely to produce constitutional effects.

Jaborandi and Muriate of Pilocarpine:—Choroidal affections of the eye are among the most important of all the intra-ocular diseases. They are very frequently met with, and for years past have been studied with special inter-

est. The success in their treatment has been moderately good, but the introduction of jaborandi and the muriate of pilocarpine has given us a greater percentage of good results than ever was attained before. When given in moderate doses, there is no special constitutional disturbance. The gradual and sometimes rapid clearing up of the vitreous under the use of these remedies is as surprising as it is gratifying.

Ectropion:—Operations for the relief of ectropion, caused by burns, are among the most difficult and unsatisfactory which the oculist has to make. Results have not been encouraging in consequence of the sloughing of the transplanted flap, and many such cases were refused surgical interference entirely. Recently the transportation of a flap without a pedicle, treated after the method of Wolfe, of Glasgow, has been followed by excellent results, and is likely to revolutionize plastic operations around the eye. The transported skin may be taken from the arm or breast. Having been secured in position by two or more stitches, it is covered by gold-beater's skin, and a compress and bandage are applied. The gold-beater's skin is allowed to remain several days, as the process of healing can be seen through it. Successful cases are reported by Wolfe, Wadsworth, Noyes, Mathewson and Aub, of Cincinnati.

Electro-Magnet:—The introduction of the electro-magnet is likely to be a boon to sufferers from penetrating foreign bodies. It has been successfully used in a number of cases, and promises to be of more extensive benefit in future modifications of the instrument, and improvements are likely to be made which will render it more efficient. We all know the fate of an eye with a splinter of iron or steel in it, and if we can rescue only a portion of those unfortunate cases from total loss, we will be achieving a triumph in surgery over which we may be justly proud.

Optico-Ciliary Neurotomy:—It becomes necessary, in a great many cases, to enucleate eyes for penetrating foreign bodies, for chronic irido-cyclitis, and for absolute and secondary glaucoma. Sympathetic inflammation of the sound eye is always to be avoided if possible, and the enucleation of the affected eye is generally resorted to. When we consider the very great importance of saving one eye, the removal of the injured or afflicted one is a small matter, so far as the cosmetic effects are

concerned. But if we can, by operative measures, save the globe and at the same time prevent sympathetic inflammation, we are accomplishing something very desirable to a large number of our clients.

The operation of optico-ciliary neurotomy proposes to accomplish this. It is too soon to speak confidently of its results, as it has its advocates as well as its opposers. Several successful cases have been reported, and yet there is considerable hesitation on the part of operators to accept an uncertain for a certain method of ridding a patient of the much-dreaded effects of sympathetic inflammation. The operation is done by dividing the internal rectus muscle, separating the conjunctiva and sub-conjunctival tissue from the globe back to the optic nerve, severing the nerve, and then drawing the posterior portion of the globe forward and cutting the ciliary nerves close to the sclerotic. The ball is then replaced in its natural position, the internal rectus united with sutures, and a compress and bandage applied. There is seldom severe hemorrhage or other unfavorable symptoms.

There is this in favor of this operation, that we always have enucleation to fall back on in case severing the optic and ciliary nerves is unsuccessful.

Myopia:—The question of myopia and the influence of school life on its development, is still receiving much attention in this country and Europe.

School-houses are now being built with reference to light and ventilation, and the changes so long contended for by medical men are slowly being recognized by school trustees and others in authority. It is hard to get boards of trustees and corporations to think that the reform measures which medical men ask for are not in some indirect way to be of benefit to the doctors.

Statistics have been compiled in which it is shown quite conclusively that myopia increases gradually from the primary class to the graduating one. If this depends on imperfectly lighted rooms and badly arranged desks, it is almost criminal not to make the necessary changes for the sake of saving the children's eyes. Doctors know that myopia is a disease, and that myopic eyes are imperfect ones; but there is a prevailing opinion among the laity that a near-sighted eye is strong and will grow stronger as its possessor grows older. This is a delusion that should be dissipated as soon as possible, for its fruits are most unfortunate in many cases.

A great deal might be done through the Superintendents of the public schools, and teachers. They are the ones who will most probably first notice the optical defects. Scholars will complain that they cannot see objects on the blackboard, and will ask for front seats or special privileges in order to see as well as the others. Children with defective eyes should be allowed certain privileges, but the defects in their eyes should be reported to their parents. If myopic children could have their refraction carefully tested, and then the amount of study prescribed for them, it would certainly be to their benefit.

Dr. Just, of Zittan, Saxony, has recently made an examination of a large number of high school pupils, who have the advantages of school-houses constructed in the most approved modern manner as regards light, space, and arrangement of furniture, and finds that the percentage of myopia corresponds very nearly with that of other observers who have made examinations where pupils were not so favorably surrounded. He says: "Myopia being as frequent in the new schools of Zittan as in other educational institutions of the same kind, we may fairly conclude that it does not chiefly result from insufficient illumination of the school-room, but rather from the great and increasing demand on the industry of the pupils at home, forcing prolonged labor on their eyes during the evening hours, frequently by insufficient light."

I feel confident from my observations that this statement contains much truth, and I feel that is is a question which should be brought prominently before our educators. We, as medical men, know only too well that the eyes are not the only organs which suffer from the present high pressure system of cramming. Headaches, pain in the back, disordered digestion and stunted physical development, are only a few of the fruits of our present school system.

I have examined a few of the school-houses in Cincinnati, and have found the older ones very defective. The rooms were dark and dingy, and the desks (which should be placed so that the light will come over the scholar's left shoulder,) in exactly the wrong position. In one school-house this was the case in thirty per cent., and in another one forty-one per cent. The new school-houses, however, are very well arranged and well lighted.

Color-Blindness:—The question of color-blindness is being agitated and will doubtless lead to some wholesome legislation on the subject. Connecticut is the only State

which has a law requiring engineers and firemen to submit to an examination for color-blindness. The matter has been brought before the Legislature of Massachusetts and New York and also before Congress. Several of the great railroad lines are taking advanced ground on this important subject, and are making examinations without the compulsion of legislation. The practical consideration of this subject comes from the fact that railroad signals by night are made by means of red, green, and white lights; red meaning danger, green caution, and white safety. On shipboard, the red light is on the port side, and the green on the starboard side.

When we consider the immense travel by rail and water in this country and Europe, we can appreciate the necessity of having men in charge of the trains and vessels with accurate and reliable color sense, so as to recognize the signals. A mistake might be—and doubtless has been—the cause of much loss of life.

The examinations of Helmboltz, Holmgren and others in Europe, and Dr. Jeffries in this country, have demonstrated that color-blindness exists in about one in twenty-five men. Dr. Jeffries alone has examined about 18,000 and found the average to be a fraction over 4 per cent. The examinations in Europe coincide very nearly with this result.

To Prof. Holmgren are we indebted more than any one else for the prominent position which the subject now holds before the public. He thoroughly investigated it from a scientific standpoint, and then applied to the King of Sweden for permission to test the railroad employes. He found 3.25 per cent. color-blind. Laws were immediately framed and adopted requiring all color-blind persons to be discharged who occupied responsible positions on the trains.

In England, France, Holland, Denmark, Prussia, Austria and Italy, the scientific men have taken a lively interest in the subject and many thousands of examinations have been made with the result as before stated of finding about 4 per cent. color-blind. The dangers of this 4 per cent. to the lives of travelers is hard to estimate. The question of color-blindness is a difficult one to discuss before committees and railroad superintendents. We are not yet able in all cases to show them the immediate connection between accidents and the defective chromatic sense of the engineer, fireman, or pilot, but we can show that in some cases this is

undoubtedly true. Scientific examinations are being made on this subject, and its great importance will be felt after a while by all the great railroad corporations and steamship lines. Dr. Jeffries says that "here the interest and safety of the community have to contend with ignorance, prejudice, pecuniary considerations and incredulity born of supposed immunity from danger." It is more than probable that many accidents on the ocean as well as on land are due to a misunderstanding of signals. The proofs are not at hand in all cases, owing to the leniency of coroners, juries and the indifference and ignorance of investigating committees, but they are slowly accumulating.

In the N. Y. *Herald* of last Saturday (June 11) I find the following:

"*Color-Blindness at Sea:*—The Supervising Inspector-General of Steamboats, Mr. Dumont, calls attention to a question in which the owners of vessels of all descriptions and classes and, in fact, the public generally are deeply and closely interested. 'Additional proof,' he says, 'is furnished every day that it is necessary that pilots of steam vessels and railroad engineers should be examined for color-blindness. The latest case is that of the pilot of the City of Austin, who, through mistaking the colors of the buoys, lost the vessel. An examination after the accident showed that at the distance of six feet he could not distinguish one color from another.' It is more than probable that a large proportion of what are called mysterious wrecks and disappearances at sea could be accounted for in this way if it were possible to get at the facts. The confusion of testimony that usually takes place in the investigation of a case of collision arises, we may be certain, from a like physical defect in the witnesses. Several of the principal lines of railroad have very wisely taken all possible precautions in this respect, employing no man as engineer who has not passed an examination and proved that his sight is perfect. The same tests should be applied to sailors of all classes, not only on steam but on sailing vessels. It is a reckless, almost criminal, disregard of life and property to permit ships to traverse the seas with practically blind men at the wheel or on the lookout."

OTOLOGY.—Otology has not been at a stand-still, but has made steady progress, for it has many ardent followers. The anatomy of the ear and the physiology of hearing have been studied more minutely than ever.

Otorrheas are now treated from a more rational standpoint than ever before. The syringe is not used so freely, for the general introduction of absorbent cotton furnishes us the means of cleansing the ear in a thorough manner, without the use of so much water. Granulations in any part of the body, if constantly bathed in pus, are likely to become exuberant. The same law holds good in the ear. After ulceration and perforation of the drum membrane, if the ear is not cleansed the pus remains in contact with the mucous membrane of the middle ear and of the external meatus, becomes fetid, and furnishes favorable conditions for the development of granulations. Most of these perforations will heal kindly if the pus and muco-pus are removed frequently enough to keep the external meatus in a comparatively dry condition. If the syringe is used, it should be followed by the use of the absorbent cotton so as to thoroughly dry the external meatus. This treatment can be repeated frequently without causing the patient much pain or annoyance, and if persevered in will bring most of the cases through to a favorable termination. Of course this is done together with inflation of the middle ear by the catheter or air bag. In simple cases astringents are not indicated and can only cause harm. It is only too true that the general routine treatment in such cases is to pour astringents into the ear, which can only act on the dermoid lining of the external meatus and drum membrane.

With regard to the use of the syringe, I would say it would not be well to dispense with its use when the discharge is profuse, but only when it is so small as to amount to only a few drops daily.

Boracic Acid is an invaluable remedy in the treatment of many forms of otorrhea, particularly those associated with granulations springing from the middle ear or the meatus. It should be blown into the ear until the bottom of the meatus is covered with it, for there is no danger of using too much. It is entirely painless. It should be allowed to remain until it is evident that a quantity of pus has again formed, when the syringe or the cotton should be used and the powder re-applied. It is antiseptic and absorbent, and in my hands has given very great satisfaction. I might give you a large number of most gratifying cases showing the excellent results from the use of the remedy but time will not permit. I can only say that I most cordially recommend its use.

Audiphone, Dentiphone, Etc.:—These have recently excited

great interest among those suffering from deafness. If one could believe the circulars which were sent broadcast over the country, we might look upon deafness and deafmutism, as among the most insignificant ailments which flesh was heir to. Aurists all over the world hailed the new inventions with joy, for they were only too glad to benefit their numerous incurable cases by this machine, and thus get rid of them. These inventions have been tried faithfully by the most experienced and reliable men in the profession, and the general verdict is that they are failures. They benefit the patentee and his agents, and only exceptionally the patient.

I have tried the audiphone faithfully and without prejudice, in a great many cases, and have never seen but one person benefited by it. Yet thousands of them are sold every year and still the circulars are sown broadcast to bring in a harvest to the agents.

The artificial ear-drum is another grand delusion for making money. It is sold at an exorbitantly high price, (500 per cent. higher than the instrument maker asks for it,) and is warranted to cure deafness in impossible cases. Among aurists its use has been almost entirely superseded by the simple cotton wad which is a thousand times better and gives relief a hundred times where the rubber drum will once.

Let the profession see that they use their influence against such barefaced misrepresentations as this ear-drum circular contains.

EUCALYPTUS GLOBULUS.

By D. J. SNYDER, M. D., Scio, O.

One year ago I thought I should be able to report to this Society at its present meeting the successful growth in this state of the Eucalyptus Globulus, Tasmanian Blue Gum, Fever, or Sainted Tree of Australia. I am compelled to acknowledge disappointment and failure. I procured seed from New South Wales, and minute instruction how to plant, and had the pleasure, last autumn, of having several plants over two feet in height, with every prospect of complete success. The severe winter destroyed every one. Why this should be so, I am as yet not able to demonstrate.

The wood of the tree is extremely hard and compact, is capable of a very fine polish, and is indigenous in the island of Tasmania (formerly known as Van Diemen's Land,) which lies south of the Australian continent in latitude 40°—43°, 30′, South, and 140° East from Greenwich. The winters are colder there than in corresponding degrees of North latitude. In Summer the heat is more intense, with less rain and moisture. That the Eucalyptus can be successfully grown in the Southern States there is no doubt.

That it has a salutary influence over malarial poisons we have sufficient evidence in the fact that in Algeria and the Pontine marshes, in Italy, where millions of these trees have been planted by order of the different governments, the greatest hygienic success has been obtained. Tracts of country that were deserted, owing to the malaria abounding, are now, since the Eucalyptus Globulus has been planted, perfectly healthy and occupied.

The French physicians speak in the highest terms of

the essential oil obtained from their own trees, showing that difference of soil, climate and habitat do not depreciate the excellence of this valuable botanical production.

For much valuable information in regard to the description, habitat and general therapeutic value of the Eucalyptus, I am largely indebted to Doctor Henry M. Marshall, of New South Wales, of whom I procured the seed. This eminent physician and microscopist, in a communication to the Cincinnati *Medical News*, of August, 1878, says: "The Eucalyptus Globulus, in common with the Eucalyptus family, sheds its bark annually, but not its leaves. The bark is rich in tannin and tannate matter. It is an evergreen. All the native Australian trees and shrubs are evergreens. Some of the Eucalyptus family obtain a vast size; in height, growth and available timber outrivaling the famed trees of California." It is a rapid grower when once firmly rooted. In California it is not unusual to see a tree of six years growth obtain the height of fifty feet. It is best grown from seed planted where the tree is to remain; or it can be planted in pots, and, when the trees have attained a proper size, be removed from the pots, either by breaking, or turning out, taking care to leave all the earth in contact with the roots. It being an evergreen, care must be taken with the transplanting. I have no hesitancy in asserting that, with the aid of a hot-house—where the young plants could be protected from excessive frosts during the first winter, the wood becoming sufficiently hardened during the second summer, they would resist the frosts ever after.

The leaves of the young plants are opposite, broadly oval, and have an agreeable aromatic odor. In the second year they become more oblong, and at maturity are from twelve to fifteen inches long, and from four to six inches broad. The mature leaves have a variety of shades and colors. On the same tree is observed, frequently, an agreeable blending of them. They contain a large amount of volatile oil; so much so that when a green leaf is ignited, it burns as brilliantly as a gas jet. Several cities in Australia are lighted with gas made from the leaves. Scattered where fleas and vermin abound, the leaves will banish them as effectually as St. Patrick, according to Irish tradition, did the reptiles of Ireland.

The antiseptic properties of eucalyptol (the essential oil of the Eucalyptus Globulus,) have been tested to prove

its efficacy. In Australia the medical profession is advocating, and some have adopted, the method of disinfecting the hospitals and other public buildings by growing the eucalyptus in large boxes through the wards and courtyards. The way they do it is to plant the seed in large boxes or tierces, filled with rich, sandy loam, and let them remain until the trees have attained the height of the ceiling, when they are removed and others put in their place. It is claimed by close observers that the experiment has proven highly beneficial; lessening the danger of contagion by the antiseptic properties, and anti-malarial influence.

The medicinal properties of the Eucalyptus are reputed to be as varied and specific as those of the cinchona. Dr. Marshall has successfully employed the oleo-resinous product obtained by distillation from the leaves; also the aqueous infusion and decoction, together with the alcoholic extract of the leaves and small twigs, in the following affections: Acute and chronic articular rheumatism, by acupuncture and rubbing in the distillate, augmenting the therapeutical effect by internal administration. After all other remedies have failed, by administering the aqueous infusion and decoction, assisting the action by half-grain doses of hydrarg. chlorid. mit., he has succeeded in effectually curing dysentery. In bronchitis the distillate has proved valuable when applied over the thoracic region. Facial neuralgia has yielded promptly to the application of the distillate externally and internally. In croup and diphtheritic affections swabbing the fauces with a strong decoction has proved very valuable. In malarial affections, the different preparations of the Eucalyptus have proved most successful. The essential oil is now being successfully employed in gonorrhea and gleet. Great success in asthma has been attained by means of smoking the leaves as cigarettes.

Much more could be written on the virtues of this remarkable tree, as it has, in the last year, attracted a wonderful amount of attention from physicians and sanitarians.

If any member of the profession would like to make an effort to grow them in this climate, I will cheerfully forward, by mail, pure seed with instructions how to plant.

A CONTRIBUTION

TO THE STUDY OF

OPTICAL HEADACHE

By JULIA W. CARPENTER, M. D.,

CINCINNATI, OHIO.

Among the affections, which seem to be on the border land between the province of the oculist and general practitioner, is what may be designated Optical Headache As these cases may fall into the hands of either, they are of interest to both.

It is owing, perhaps, to the comparative rarity of such cases, that one looks in vain for definite information on the subject, either in works on general practice or ophthalmology. Those who have written on this special subject of headache, and have mentioned certain nervous phenomena connected with the eye, still have thrown no particular light on that form. To Galizowski, of Paris, belongs the honor of describing this type of cases. He first analyzed its symptoms, grouping and portraying them so distinctly as to remove difficulties in the way of diagnosis. This he was enabled to do by the careful study of twenty-one cases observed within two years. As besides the pain in the head the most alarming feature is the loss of vision, for a time, usually of one half of any object looked at, he gave to this affection the name "Headache of the Eye or Periodical Hemiopia."

Being specially interested in his presentation of the subject, and at the same time seeing one of his patients, it was a preparative for several cases of the same kind

that came under my own care during the last winter. A history of one of these patients affords an accurate description of a typical case. In March last, I was summoned to see Mrs. L—— as quickly as possible. The messenger stated she was suffering with an intense pain in the head, and had lost her sight three or four times in the last twenty-four hours. The patient was found in one of her severest attacks, in a state of great prostration, with feeble pulse, cold extremities, intense pain in the head, the sight feeble, though the half blindness had passed away. After obtaining for her a state of comparative ease, chiefly by hot applications, an investigation of the case proved it to be one of the apparently alarming optical headaches. With careful questioning the following statement was obtained: The attacks come suddenly, in an instant, at any time or place. The patient first sees, on the outer side of one eye, about a foot off, a trembling motion, like that of hot air above a furnace. This changes to colors, rainbow hues, then fades to a cloud. She sees also bright zig-zag lines, and at the same time can see but the lateral half of any object looked at; as half of a person's face, for instance. The invisible half of any object is directly opposite the side on which the colors are seen; that is, if the colors are on the outer side of the right eye, it is the left side of the face opposite that is not seen. The hemiopia lasts about half an hour. A headache follows, beginning in the temple and always on the side of the head opposite the eye affected. The pain then passes to the top of the head, spreads all over, goes down the back of the neck to between the shoulders, and lasts in all usually half a day.

The eye symptoms, in her case, are the forerunner of the headache. Either eye may be affected, but only one at a time, and oftener the right than the left. The sight is feeble for the rest of the day, and the eyes feel strained. The attacks seem to be induced by the use of the eyes, and using the eyes seems to renew them. The attacks sometimes occur six or eight times in succession, two days apart; again the interval may be one or two months. They often come on during sleep. She dreams of the colors and half-blindness, and is awakened by the headache. The attacks began when she was only twelve years of age, and are, on the whole, less frequent than formerly, she now being thirty-eight. Her father and mother are both affected the same way, also one brother and two sisters. Strangely, she had married into a family some

of whose members were similarly troubled, her step-daughter being one of them.

A second case of interest differs in some of its details from the one just described. A young lady, aged seventeen, in whom the attacks began at thirteen, has always a slight headache *first*, and over the eye affected. It is always the left eye, never the right. A yellow spot is first seen on the outer side of the eye, then every bright color in an oblong shape. These quiver constantly, and are seen with the eyes closed as distinctly as when open, and they continue visible the entire day, unless sleep comes sooner to her relief. She sees the lateral half only of objects, for about half an hour, and has never noticed the sight feeble afterwards. The attack is sudden, and the headache always on the same side as that on which the colors are seen.

The general characteristics of this affection may be summed up as follows:

The attack comes on suddenly. The blindness usually precedes the headache, but in some instances follows it, and when the headache comes first, the attack is not quite so sudden.

The loss of vision is generally the lateral half of an object, though sometimes it is the upper or lower half. Again there may be seen only a black spot in the center of an object.

Usually one eye only is affected at a time. Though each may in turn, one is generally oftener than the other.

The hemiopia lasts from twenty minutes to half an hour, in rare cases longer, and the sight remains feeble often for the rest of the day. The eye-balls are sometimes tender to the touch, a little inflamed, or have a strained feeling.

Though the field of vision is obliterated one half, the acuity of vision is normal, the patient being able to read.

About as many women as men are troubled with this affection.

Some interesting inquiries are connected with this subject. First, is there any type of eye that predominates more than another in these patients? Have the majority the normal eye, are they near sighted, or have they the reverse formation? In the conclusions drawn by Galizowski, after the careful study of twenty-one cases, he makes no mention of this point except in one instance, when he states the eye was of normal type. In the first

of my own cases here described, the patient is hyperopic. The attacks are often started simply by the use of the eyes in reading or sewing. Doubtless if the strain upon them was removed by suitable glasses, the attacks would be less frequent, but her decided opposition to wearing glasses has prevented this test being made.

Her mother, who was subject to these headaches, was doubtless also hyperopic, as, the daughter states, she wore glasses before thirty, forty-eight being about the age at which the normal eye requires their use. One other patient was also hyperopic, making three out of a group of four cases.

Second, is this trouble hereditary, or are most of the cases isolated? Judging from this group, heredity seems to play a part. In one family, both parents, one son and three daughters were subject to it.

Third, does this disease remain through life, or can it be ameliorated or removed altogether? The mother of the first patient described was subject to it until her death, at seventy years of age. A young lady, a victim of this trouble, was at the same time a sufferer from dyspepsia. When, several years ago, she was relieved of the latter, this peculiar headache also disappeared and has not since returned.

As to treatment of these cases, the symptoms connected with the eye are not grave and require no treatment. They do not show any disease of the optic nerve or choroid. An examination of the eye with the ophthalmoscope, either at the time of the attack or during the interval, reveals nothing abnormal. If, as in the first case reported, the eye is not of normal type, then all straining of the eye must be relieved by appropriate glasses. This removes, not the root of the difficulty, but something which aggravates it or causes it to recur more frequently.

Some of these patients are subject to dyspepsia, and sometimes when that is overcome the periodical hemiopia disappears. Even those not ordinarily troubled with indigestion, at that time are apt to have some gastric derangement. Emesis often comes of itself and always affords relief.

Regulation of the diet, abstinence from stimulants of all kinds, coffee, spices, and alcohol in any form, fresh air and out door exercise, aid greatly in improving the condition. Iron and quinine seem also to be of service.

In general, a tonic, fortifying treatment seems to be the one attended with most success.

As to diagnosis of these cases, there are times when it would be fraught with serious loss to the patient not to have this form distinctly recognized. This cannot be better illustrated than by a case related by Galizowski: A gentleman came to consult him, who had lost the sight of one eye from glaucoma, and had frequent attacks of hemiopia in the other. The question was whether this was owing to sympathetic irritation, requiring enucleation of the lost eye, or whether it was due to optical headache. After a thorough investigation it proved to be the latter, and the other eye was not removed, thus saving the patient from an operation and the great inconvenience of wearing an artificial eye.

This, with other cases, shows there is no affection in which it is often of more importance to make an absolutely correct diagnosis than in opitical headache.

(A letter received from Galizowski, since finishing this paper, states that he has now had one hundred and twenty-six cases of this nature, sixty-five of which were women and sixty-one men. He also states the important fact, that in some of these later cases the blindness was followed by epileptiform attacks.)

PROGRESS OF

GYNECOLOGY.

By M. C. CUYKENDALL, M. D.,

Bucyrus, Ohio.

In reviewing the literature for the last year I do not find the reports of cases purely medical, as full or frequent as I do those belonging to the surgery of this especial branch of our profession. Recognizing the fact that Medical Gynecology, if I may so term it, is of far greater importance than surgical, to the largest number of the profession, and believing, also, that earnest and able men are devoting their energies to its advancement, I deem it unfortunate that there exists this seeming omission of research. While it is not a valid excuse, we may possibly find a reason for it in the fact that the administering of medicines and noting their effects, do not elicit the same *eclat* which surgical achievements do.

Prof. Fordyce Barker, in his address before the American Gynecological Society, in 1877, stated that "the sole justification of any operation which involves suffering and danger to the subject, must be the strong probability, based on scientific knowledge, that compensating good will be the result."

E. P. Foster, in his review of West's *Lectures on Diseases of Women*, found in the April number of the *American Journal of Obstetrics*, 1880, well said that "cutting, scraping and stretching are not the essence of gynecological practice, and boldness is not the prime requisite of success." If a Gynecologist cannot be both, it is of the utmost importance that he be a physician rather than a

surgeon, ever bearing in mind that the medical practice, in diseases peculiar to women, has been over-shadowed by the surgery of these cases. There is, however, an occasional notice of medicines, either simple or compound, which, if not new to the profession as remedies, are so in their application.

Fluid extract of blackhaw, introduced a few years since by Prof. Jenks as antiabortive, has stood the test of time, and is also used quite successfully as an anodyne, or rather antispasmodic, in certain functional derangements of the uterine system, and is useful in some cases of profuse menstruation.

Chloral, in combination with bromide of potassium and morphia, has been introduced for, and found to control, the pains preceding menstruation, especially in the, so-called, ovarian dysmenorrhea, or more strictly speaking, chronic ovaritis.

In the *American Journal of Medical Sciences*, for January, 1881, is an excellent article by Rudolph Tauszky, M. D., Physician and Surgeon to Mount Sinai Hospital, &c., on the treatment of metrorrhagia and menorrhagia. No doubt every physician present has been sorely troubled with these troublesome, persistent, and, at times, dangerous cases. Dr. Tauszky here gives an article in which their successful management is set forth fully, clearly and forcibly, and the value of the article is in the fact that it is based upon an experience of several years with the treatment detailed, and not upon theory.

After referring to the importance of directing the curative measures to the existing pathological condition, he urges the necessity of continuous treatment rather than limiting it to inter-menstrual or menstrual periods. He advocates the use of the wire curette, of Thomas, for fungosities, and where this fails, uses the hot iron to the lining membrane of the uterus. He uses and recommends as a hemostatic the application of Monsell's solution, diluted with equal parts of glycerine, to the endometrium, and states that he has never seen any evil results follow this application; but cautions that the uterine cavity be fully dilated with tupelo or laminaria tents (never using sponge) before making the application. In patients of full habit the use of salicylate of soda, internally, is spoken of very highly, to increase arterial tension and reduce the size of the enlarged flabby uterus. Cold water is not used in those cases wherein it induces chilliness, or in which the skin becomes blue

or pale. The copious hot water, vaginal injections, of temperature of 110° to 120° F., as recommended by Trousseau nearly thirty years ago, in atony of the uterus, and which have been recently revived by Emmet, have in the hands of Dr. Tauszky been attended with remarkable success. There would be more advocates of its use if it were used oftener and in larger quantities each time. A good rule is to continue it until the parts are thoroughly blanched, and repeat it often enough to keep them so. Ergot, digitalis, rest, friction, &c., are used, but in a thoroughly systematic manner, strict attention being paid to the details. Uterine colic, when depending upon clots in the uterine cavity, he relieves by holding the internal os and cervical canal open for a short time with a steel dilator. Taking it all in all the article is one of the most valuable contributions of the past year and well repays a careful perusal.

A propos of hot water injection, Prof. Courty (*Am. Jour. of Obstetrics*, Jan., 1881,) recommends its use as a preventative of hemorrhage in operations upon the genital organs of the female, and I can bear witness to the good effects.

Those urethral caruncles, once believed to be persistent and seemingly recurrent, are now easily cured by treating the tubular glands discovered recently by Skene. (See *Am. Jour. of Obstet.* for April, 1880.) May we not also here find the seat of the disease in certain intractable ulcerations of the urethra, referred to in the fourth edition of West's lectures upon the diseases of women?

In the *Am. Jour. of Obstetrics*, for July, 1880, Dr. Gehrung, of St. Louis, contributes an instructive article on the mechanical treatment of cystocele and procidentia uteri. After citing the proposition upon which all authorities agree, to-wit.: that procidentia is co-existent with prolapsus of the bladder, he makes the statement that "if the bladder can be returned, and held in its normal position, the procidentia as such must be cured." Then, giving a description and illustration of a pessary devised by him, with which he has successfully treated several cases, he follows with a full report of them.

In the same journal Dr. Rob't Newman, of New York, details a method of curing urethrocele with a surgical operation, citing several cases, among which is one of eleven years standing, which several operations had failed to relieve. Dr. Newman's conclusions are thus summed up:

"1st. Simple urethrocele exists as a disease *per se.*

"2nd. Complicated urethrocele is generally caused by a loss of support from below, the parts rolling out and dragging down the tissues from above, but it may be caused by influences forcing the parts downwards."

"3rd. Operations are not always necessary to cure a urethrocele; other means may do it, particularly in simple urethrocele, and often in complicated urethrocele without a ruptured perineum." If the observations of these gentlemen are sustained by time and the profession, the suffering patients, at least, if none others, will have cause to be thankful.

Another indication of progress is manifested in the infrequent use, comparatively, of nitrate of silver to the cervix for ulceration. But a few years ago, it was a very frequent application, a sort of "pons asinorum." Prof. Reamy's statistics on this point are interesting and instructive; he reported that in the examination of eight thousand cases, he found only nineteen of true ulceration of the cervix—a significant fact.

Another indication is in the natural subsidence of a malady, very prevalent a few years since, which has been aptly styled "speculo-mania."

Several contributions to the pathology of dysmenorrhea have appeared, but, the same old difficulty remains. Emmet denies that it depends upon obstruction, but says, "that unless the flow is scanty, painful menstruation is accompanied by clots, and that their formation does not depend essentially upon obstruction." Again, "Every women, even in health, will experience at least some degree of discomfort at the menstrual period. That she should be absolutely free from pain, and suffer no inconvenience at this time, is an abnormal condition."

While I believe it may be inconvenient, yet I believe it to be a physiological process, and confess that I am unable to discern why it should be painful in health. Probably when the pathology of dysmenorrhea is written, if it ever is, the etymology of the word will be wholly ignored.

Other advancements which have come under my notice are duly recorded by our authorities in text books, notably by Thomas and Emmet in their revised editions.

Those of the profession who pay especial attention to this branch have, I think, every reason to be satisfied with the progress made during the past year or two, and it is cheering to note that those holding extreme views are gradually locating on middle ground.

INSANITY.

By J. C. KENNEDY, M. D.,

Batavia, Ohio.

There is, perhaps, no subject within the domain of Medical Science that has attracted earlier, or more, attention from advanced scientists and thinkers, than the subject of insanity. And although writers and thinkers of ability, in all ages, have devoted time and talent to the elucidation of the subject, I believe there are no two original thinkers who have entirely agreed on even a definition of the term. If this be essentially true, then I, in common with every man who has given any definite thought to the subject, have a perfect right to enunciate those thoughts or conclusions, however erratic or fanciful they may be. It is upon these grounds that I venture to occupy a position that should have been filled by one more competent for the task. But, the duty being allotted me, I shall proceed to give my own convictions, irrespective of what may have been promulgated by others.

On the subject of Insanity my facilities have furnished me with nothing, either definite or satisfactory, and, in my opinion, the reason for this is that we have sought a complex, instead of a simple problem. Entertaining this view, I shall endeavor to simplify the study by excluding from the field of investigation that mythical enity, called the mind, with all its fanciful attributes, as either belonging to the domain of Religion, or existing only as scientific idealities.

This being done, it reduces the problem to a simple question of the physiological functions of the brain and its appendages. By appendages I mean those nerve cen-

tres, or ganglia, whose functions are, in part, to originate and transmit impressions to the brain for adjudication and idealization. It will be admitted by all, that vision is the function of the structures of the eye; hearing of the ear, and so on with the structures of all the five senses. Upon the same physiological principle we may consider intellection, or idealization, to be the function of the structures of the brain and its appendages, and, in either case, that conditions of the physical structures, known as disease, produce functional disorder or derangement.

Hence, if the brain and all of its afferent structures and channels are in a normal condition, their functional action will necessarily be normal; just as a healthy condition of the tissues of the eye produces normal vision; and the result will be correctly recognized as perfect sanity in the one case, and perfect vision in the other. But, if the afferent channels and their ganglia become diseased, an erratic, or false, impression will be conveyed to the adjudicating groups of cells of the cortical layer; and as these idealizing groups of cells have no control over those morbid sensations, or their origin, they are accepted as true and adjudicated accordingly; as the testimony of a false witness as to outside facts, may be accepted and adjudicated as true by the court; and the result of the adjudication in either case be so apparently anomalous, or inconsistent with the original facts, as to produce erroneous conclusions in both cases, and yet the result would be in accordance with the accepted testimony.

Thus, the sane and insane reason with equal logical accuracy from their respective predicates. As an instance, the man with delirium tremens, where both illusions and delusions so frequently occur, has the erroneous impression conveyed to the adjudicating portion of the brain, that there are actually snakes in his boots, or that an assassin is pressing him; when he acts just as reasonably as you or I would, if the facts existed with us, that his abnormal impressions create for him, and hence, we have no evidence of any abnormal, or erratic action in the reasoning process, in this, or any other case. The reasoning function is never either diseased or disordered.

As to the question of what structures are diseased in these cases, I answer: they are always the afferent channels, or their ganglionic centers, except where the cortical or adjudicating textures are primarily involved, pro-

ducing that variety of insanity denominated "maniacal;" and characterized by an incoherency of language denoting a want of consecutiveness in thought.

It will thus be seen that the structures involved are always those whose functional action precedes idealization; and not, as held by Winslow, Bucknell, Tuke, Maudsley, and other cerebral pathologists, "that the instrument through which the phenomena of the mind are expressed is the part diseased."

To the question, "What is insanity?" or, "In what does it consist?" I answer: It is one of the functional manifestations of a lesion of the brain or its appendages, and not a disease *per se* in any legitimate sense of the term.

EXSECTION OF RIB

IN THE

Treatment of Empyema.

By N. P. DANDRIDGE, M. D.,

Cincinnati, Ohio.

In 1865, in the *Archir. f. Heilkunde*, Roser, of Marburg, proposed and advocated the propriety of exsecting a portion of rib in those cases of empyema which had resisted the usual form of drainage through an opening in an intercostal space. The advantages claimed for this procedure were: 1st, There would be readier access to the pleural cavity and freer drainage; the opening in the intercostal space being often too small from the first, and always tending to contract as the adjacent ribs approximate one another by the falling in of the chest wall. 2d, The removal of a section of rib would allow a much greater collapse of the chest wall, and would thus assist greatly in reducing, or obliterating entirely, the cavity in the pleura by allowing its walls to come together, a condition which is essential to a cure.

To appreciate fully the importance of these advantages, it is necessary to recall the conditions which exist in all cases of empyema. The accumulation of fluid in the pleura tends to expand the movable chest wall so as to increase its circumference; it exerts at the same time a much greater influence upon the yielding lung tissue, so that it becomes more or less compressed. In this condition the pleural membrane becomes thickened by the continued inflammatory action, so that, even if the press-

ure is removed by the withdrawal or absorption of the effusion, the lung is so bound down that it cannot expand. Withdrawal of the fluid will permit the falling in of the chest wall, but only to a certain extent, for soon the adjacent ribs come in contact with one another and prevent further collapse. A cavity thus remains, bounded on the one side by the chest wall, which no longer yields, and on the other by the lung, which cannot expand owing to the resistance of the thickened pulmonary pleura. Obliteration of this cavity can only take place by a growth of granulations, which can be accomplished only by a long continued process of suppuration, which the patient is generally unable to stand. The extent of the cavity is such that it generally contains more or less of the retained pus, which is liable to undergo decomposition and thus give rise to conditions favorable for the production of septicemia. The usual history of these cases, therefore, is of a long continued purulent discharge, either through a spontaneous or artificial opening; and the patient gradually succumbs to exhaustion, septicemia, or amyloid degeneration of some internal organs.

During the last three years, I have had occasion to practice exsection of a portion of rib in two different cases; and as they show the advantages of the procedure in certain conditions, I offer them as a contribution to the history of the operation. The first case was published *in extenso* in the *Cincinnati Lancet and Clinic*, April, 1879, and from that account I condense the following:

F. G., age 22, an ice slinger, entered the Cincinnati Hospital, July 29, 1878, for a gun shot wound of the chest. The wound was over the eighth rib, three inches outside of the nipple line. The ball had penetrated the cavity but had not come out. On admission he was in a state of collapse, but with stimulants and nourishment he gradually rallied. Five days after admission bronchial breathing was heard in the neighborhood of the wound, and he passed through an attack of pneumonia, which was confined to the lower part of the lung. Aug. 18, he was able to be up, and on the 21st he insisted upon leaving the hospital, although dullness was still distinct on the posterior aspect of the chest.

Four days later he was re-admitted, with evidence of effusion in the left pleura. This increased to such an extent as to interfere with respiration, and five days after admission the chest was aspirated and thirty-seven

ounces of serous fluid drawn off giving much relief. The effusion again accumulated and in seven days aspiration was again practiced and the same amount of fluid obtained as before, but this time it was purulent. This was followed by benefit which was of short duration. The temperature gradually rose to 102° and the pulse became rapid and feeble. Sept. 19, a permanent opening was made into the pleural cavity in the seventh intercostal space, and a drainage tube inserted. Pus of a sanious character escaped. This operation was followed by decided improvement; the discharge was free, the temperature became normal, the pulse lower, and the appetite improved; he slept well, and was able to sit up. This improvement lasted for some days when the discharge changed and became foul smelling. An effort was made to correct this by inserting a tube to the bottom of the cavity and washing it out with a solution of carbolic acid. This could not be efficiently done, and the patient soon began to exhibit all the symptoms of septic fever. During this time the wound made by the entrance of the ball, which had been completely healed, opened anew. The condition soon became such that it was determined as a last resort to exsect a portion of rib in order to gain free access to the cavity, and thus accomplish satisfactory drainage. This was done Nov. 14 and five inches of the eighth rib removed. The patient was in a bad condition to bear such an operation, and before it was completed it became necessary to resort to the injection of whisky by the rectum. Two cavities were found; the anterior, beneath the bullet wound, was about two inches in diameter and was filled with decomposing clots of blood. This cavity did not communicate, so far as we could judge, with the much larger one which occupied the larger part of the posterior portion of the lung. These cavities were washed out daily with a weak solution of carbolic acid. Marked improvement followed at once, and in three months the patient left the hospital with the openings entirely closed, with the exception of a shallow sinus, from which only a few drops of pus escaped.

Mar. 12, 1879, Dr. J. C. Mackenzie visited the man with me at his home, and dictated the following record of his condition: "General appearance that of a healthy and well nourished man; with a considerable amount of adipose tissue over his abdomen. The left shoulder droops somewhat, and there is general retraction of the left side

of the chest. The left pectoral muscle is less prominent than the right. Measurement on a line with the nipples: left side of the chest, 16¼ in.; right, 17¼. The expansion on right is ¾ in.; on left, *nil*. Two inches above the nipples, the left side is 16½ in., and the right 17½; the expansion is equal on both sides, and amounts to ½ in. Anteriorly the dullness commences on a level with the nipples, and increases downwards for two inches, when suddenly percussion reveals a tympanitic sound, which is evidently from the stomach, the retraction of the diaphragm having drawn up that organ higher than usual.

In the axillary line the same condition holds true. Posteriorly dullness commences on a level with the lower angle of the scapula, and extends to the border of the ribs. The apex beat is felt to the outside of the nipple line during expiration. The respiratory murmur is heard beneath the clavicle, it is feeble; is not perceptible below the nipple. The same is found in the axillary line. In the supra scapular region the respiratory murmur is distinct; it ceases below on the level where dullness commences. The wound is entirely healed and the cicatrix is healthy. From the above it appears that there is a general retraction of the left side to the extent of one inch; respiratory movements are, however, perceptible above the nipple line. Below, there is no expansion, and no respiratory sounds can be heard."

Such was the condition of this man, March 12, 1879. June 10, 1881, more than two years later, he was again carefully examined by Dr. Mackenzie, with the following result: "Very slight curvature of the spine in the dorsal region, with the convexity to the left. Area of the cardiac dullness somewhat increased to the left. Percussion note normal over the whole of chest. Vesicular murmur rather feebler on the left below the nipple anteriorly, and the inferior angle of the scapula posteriorly. No abnormal sounds heard anywhere. Circumference of the chest one inch below the nipple, 33 inches—17 in. on the right, and 16 in. on the left. Expansion on inspiration 1½ inches—1 in. on right, ½ in. on left." The inner end of the anterior portion of the rib removed could be distinctly felt. It occupied a plane anterior to the adjacent ribs and was very movable. The end of the posterior fragment was less readily felt, and seemed adherent to the adjacent ribs. In the interval, where the excised portion had been removed, the interspace was diminished and the ribs approximated.

From the above it will be seen that the lung has expanded in the last two years and become accessible to air, as shown by auscultation. The total expansion has increased from ¾ in. to 1½ in. The left side, on which expansion was *nil* at the time of the first measurement, now shows ½ in. It is quite probable that this will increase, for expansion of the lung has been seen before in similar cases

The history of the second case I must give in a very brief and unsatisfactory manner. It occurred in the practice of Dr. Holdt, and his recent illness and death have prevented me from supplementing my own imperfect knowledge of the case from his notes. The history is simply an outline given from memory from the account of the case as detailed to me by Dr. H.

Some two years ago, a German girl, of about twenty-six, developed an acute pleurisy, which was marked by considerable effusion in the right pleural cavity. This effusion not subsiding, several months after the onset of the attack aspiration was practiced and a quantity of purulent fluid was drawn off. The effusion again accumulated, and finally made a spontaneous opening at the point where the aspirator needle had entered. From this opening a thin purulent fluid constantly escaped. There was no evidence after the operation of any expansion of the lung. A short time after the spontaneous opening, I saw the case with Dr. Holdt, the discharge was then thin, and small in quantity, and the girl's general condition was good. A few weeks ago I again saw her. Her face presented a pale, anemic, and waxy appearance; both legs as far as the knees were swollen and edematous. This swelling disappeared when the recumbent position was assumed for some hours. There was no abdominal dropsy. The urine contained a large quantity of albumen. In the seventh intercostal space, external to the nipple line, was a small opening only large enough to admit an ordinary sized probe, and from which a thin, sanious and rather foul pus escaped, which was increased on coughing. This opening would close up from time to time, and then open again with free escape of the pent up fluid. It was thus apparent that the opening was too small to drain the cavity, and that a quantity of decomposing pus was constantly retained; it was also too limited to permit the injection of any disinfecting solution. From the above it was only too evident that the constant drain upon the system had already produced amyloid degenera-

tion of the kidneys, and unless this could be speedily checked or diminished there was little hope that a fatal termination could be long delayed. Efficient drainage and ready disinfection of the suppurating cavity were the essentials in any plan looking to an improvement in the case. The exsection of a portion of rib was considered the most certain way of effecting this, and was accordingly performed. An inch and a half of the eighth rib was removed from the point where the opening had existed; that is, somewhat external to the nipple line. A considerable quantity of pus at once escaped. The operation was well borne. A silver canula was inserted, and directions were given for the frequent washing out of the cavity with a carbolic solution. No febrile re-action followed. It was found necessary to wash out the cavity several times a day, for the delay of even a few hours rendered the discharge bad smelling.

Little apparent benefit followed this operation. The amount of discharge did not diminish, the general condition remained the same, and there was very little evidence of repair in the wound. She died several weeks after the operation, with symptoms pointing to the disease of the kidneys. The case was so far advanced that it offered but little prospect of success from the first. The patient's condition was such, however, that unless the suppuration could be at once checked, there was no hope of averting a fatal termination. In another case I should be satisfied with simply enlarging the opening, and not attempting a resection of the rib.

In estimating the benefit of the operation in these cases, it must be admitted that in the second it was *nil.* In the first it was most striking and was followed by immediate improvement at a time when the symptoms had been growing progressively worse. These symptoms showed marked evidence of septicemia, and extreme prostration from a profuse and foul discharge. The re-expansion of the lung which has occurred in this case, is an interesting fact which confirms what has been observed before. It is probably largely due to the traction made upon the periphery of the lung by the movements of the chest wall, the pleural adhesions binding the lung and wall together so that movement in the latter must of necessity make traction on the former.

The operation itself is simple and easily performed. The incision should be carried down to the rib and through the periosteum, which must be carefully sepa-

rated from the bone. If this is done, all danger of wounding the intercostal artery is avoided. The rib itself may be cut through by a pair of cutting forceps, gouge or chisel. Before cutting into the pleural cavity, a needle armed with a ligature may be passed beneath the intercostal artery and tied; this should be repeated an inch or so beyond, and the opening made between the two.

One or more ribs may be thus removed to the extent of several inches. If no opening has previously existed, the operation should be done antiseptically. If an opening already exists, it will be found impossible to thoroughly disinfect the cavity, which already contains decomposing discharges, and recourse must be had to frequent washing of the cavity with a solution of carbolic acid or other similar agent.

In conclusion, in order to estimate the scope and value of Roser's operation, the following may be formulated for the operative treatment of pleural effusion:

1st. In all cases of acute pleurisy, when the effusion is so great as to prove a source of danger by its quantity, aspiration is indicated regardless of the general course of the disease. The operation is here undertaken to avert an impending danger.

2nd. In all cases of acute pleurisy, when, after the subsidence of fever and the general symptoms, a considerable quantity of effusion remains, aspiration is indicated for its removal. In ordinary cases of acute pleurisy, the average time for operation will not be earlier than the 20th day of the disease. The exact time in individual cases will largely depend on the febrile condition. In all other conditions the mechanical removal of the effusion in acute pleurisy is not indicated.

3rd. In all cases of subacute, chronic, and latent pleurisy, mechanical removal of the fluid is indicated as soon as the effusion is certainly recognized; and should re-accumulation occur, the operation should be repeated. In these cases aspiration should always be practiced first, and repeated as often as the effusion re-accumulates and remains serous. If, however, the fluid is purulent from the first, or becomes so after aspiration, repetition of this operation is not indicated, but rather the establishment at once of a permanent opening through an intercostal space in order to secure constant free drainage and to permit the frequent washing out of the cavity,

and thus prevent stagnation and decomposition of the discharge.

4th. When the opening through the intercostal space proves insufficient to accomplish this result, or when the discharge continues a long time with deleterous effect, or the general health shows that obliteration of the cavity cannot occur, a section of rib, or more than one if necessary, should be practiced in order to offer freer access to the cavity of the pleura, and also to allow the chest wall to collapse to such an extent as to produce obliteration of the cavity by permitting its walls to come in contract.

5th. In cases where an absolute diagnosis cannot be had, between latent pleurisy and chronic pneumonia, aspiration is indicated to establish the diagnosis, and at the same time draw off the fluid if any be present.

REPORT ON

SANITARY SCIENCE.

By D. N. KINSMAN, M. D.,

Columbus, Ohio.

We can treat this subject only in a general way, from the lack of proper statistical material and want of knowledge of the number as well as the causes of the deaths in Ohio. The State provides for the collection of vital, among other statistics, by the assessors; yet so little is the value of this work appreciated, and so little attention bestowed upon it, that the returns give intrinsic evidence of their gross imperfection.

The gross mortality, compared with the total population, will give the death ratio; but when the causes of the deaths, resting on an accurate diagnosis, can be shown, then the information becomes of the very highest value in considering any topic in state medicine. The comparison of the mortality tables with the soils, water supplies, thermometric and barometric readings, food, dwellings, and occupations of a community, will enable us to determine very largely the etiology of their diseases. The education, and social and religious customs of people, enter into the problem of the value of life in any given population. The mortality of children under one year, is many *per cent.* greater among those whose parents can not read and write, than among those whose parents have this qualification even in its most rudimentary degree.

The "sweating sickness," which scourged England so severely in the XIVth century, is believed to have depended upon the location of men's dwellings. The Black

Death had over spread Europe during the middle of the century. The impotence of medicine had turned the attention of the people to their religious duties. Lent and all other religious fasts were observed with the greatest rigor. In order easily to obtain fish, men placed their habitations in the lowlands by the lakes and rivers. These became contaminated with the filth of the people. The water used for drinking poisoned, and the vapors rising from the foul streams mingling with the air contaminated their blood, until their enfeebled bodies again became a prey to pestilence.

Cholera epidemics of the present times, furnish us with other examples of the influence of religious fanaticism in the destruction of human life. As regularly as the devotees of India complete the round of weariness, privation, exposure and license, of their pilgrimages to the sacred waters, so regularly is there an outbreak of cholera, which by the force of its initial impulse has sometimes over-spread the world.

The epidemics which desolated the earth during the ancient and middle ages, have been met and conquered. No less a work remains for us to do. Less obviously, but none the less certainly, are we loeing yearly thousands upon thousands of lives from causes which can be controlled by proper sanitary measures.

Economics of Death and Disease.—The wealth of a state depends upon the number of citizens of mature age who are engaged in productive labor. The producing period of human life is comprised between the ages of 20 and 65 years. The loss of producing lives impairs the income of the state. By calculating the average expectation of human life at the various ages, when life is terminated, the loss may be ascertained. By this method, reckoning only fifty *per cent.* of the lives lost, as producing, according to the report of 1880, there were lost in Ohio, on lives between the ages of 20 and 65, 123,931 years. If the income from the labor of each life so terminated was worth one hundred dollars annually, the loss to the State was, for 1880, $12,393,100, on productive lives. Lives terminated during their immaturity, or previous to their becoming productive, dissipate the wealth of the state by causing the loss of investment made for their care and protection. This money has been paid from the estates of their parents or legal guardians. According to English estimates, the cost of maintaining a child during its first year is fifty dollars, and at the twentieth year the cost

has reached one thousand dollars. Taking the statistics of Ohio for 1880 as our basis, we find there was lost to the State, on immature lives, $3,416,000. The total of these two items is $15,745,100, exclusive of other necessary expenses attendant upon sickness and death.

The experience of mutual benefit societies in England, shows that for every death which occurs two persons are constantly sick. In other words, each death represents 730 days of sickness. It has been estimated that one in every twenty-eight who are sick, dies. In 1879 there were 27,178 deaths reported, which is equivalent to the loss, according to English experience, of 56,358 years, from sickness. Or, according to the American estimate, during 1879 there were sick in Ohio 789,012 persons. We find in Ohio for 1880, there was an average of 6.5 days sickness for every person. The European estimate is 19 or 20 days per person. This discrepancy I explain on the ground of imperfection of our data.

In this way we may approximate the economic importance of Disease and Death to the State, annually.

The proportion of births among the native population is less than among the foreign population.

General Mortality.—The general mortality of males from one year to twenty-five years of age is 52.3 *per cent.* of the total; that of females 47.3 per cent.; from twenty-five to forty-five years of age, the numbers for males and females are exactly reversed. The mortality of the United States in 1870, was 12.5 per 1,000; in 1880, it will reach 18 per 1,000, as shown by the census reports of that year. The mortality reported for Ohio for several years has averaged 8.5 per 1,000, which shows the imperfection of our tables.

Bond estimates that of every thousand children born, 900 should be alive at the end of the first year. The English estimate is that 852 should be alive. In Ohio, of every thousand born, only 800 are alive at the close of the first year.

Prevention of Diseases.—"The number of lives lost in the United States from causes clearly preventable, is certainly over 100,000, yearly. In addition to these unnecessary deaths, there are probably constantly sick in the United States from causes which are preventable, 151,000 persons. The producing efficiency of the average life in this country, falls short of the normal by at least fifty *per cent.*" (Ziemssen's Cyclopedia, Vol. xviii, p. 5, *et seq.*)

It is only when we go into the study of figures that

we can appreciate the influence of disease upon a community. We must keep in mind that the diseases which afflict humanity are not matters of chance. They are dependent upon a concurrence of conditions known as etiological factors. These factors are two-fold: internal and external, to the sick. Remove either, and the possibility of disease is at an end. In respect to the patient we have to consider organization, constitution and general condition of the body. The stronger the body is, the more certainly it can strive against the general causes of disease. A robust body gives, however, no immunity against special causes of disease. The special causes comprise the viruses and contagions. These all have their course when once they gain entrance to the body in spite of its condition.

But it has been further learned that these specific contagions have their peculiar modes of evolution and propagation:

1. In one class, the contagion is found in the human body alone, and can act immediately on another unprotected human body.

2. In another class the contagion is found in the human body, but as it escapes from the body it is harmless, and only becomes active after a more or less prolonged sojourn outside of the body under favorable circumstances.

3. And yet another class of diseases arises from infecting matter which is produced external to the body, and by its reception becomes the factor of disease.

The recognition of these modes of evolution and propagation of disease, has enabled physicians to say that diseases are of two general classes, preventable and non-preventable. The more diseases have been studied, the larger has the first class become, and there is no doubt that many diseases whose causes are yet unrecognized. will, in time, give up their etiological secret and become subject to hygienic precautions.

State medicine can indicate to the executive branch of a government what is necessary to save life and protect health, but when it is left to the option of any people, prejudice or superstition on the part of a few may cause such a neglect of measures of common safety as seriously to threaten the safety of the majority. This is notable in the case of small-pox. Vaccination, thoroughly performed and repeated, till susceptibility to its action is extinguished, will, I have no doubt, protect from small

pox, and yet 255 persons died from this disease in Ohio in 1877, a mortality of nearly one per cent. Certainly if we legislate against petty larceny, and other crimes against persons, much more should legislation be had on the subject of vaccination, which, we believe, will save the annual loss of life from small pox in Ohio, and the United States. As to measles and scarlet fever, we know their ravages can be stayed by isolation of the patients and systematic disinfection. These diseases give no evidence of arising *de novo*. The germ must fall on a favorable soil for its development. Restrict the action of the germ by isolation and destruction and the disease will cease. On the Faroe Islands there were no cases of measles from 1781 to 1849. Then the poison of the measles was carried to the island, and all but 1,500 of a population of 7,782 took the disease, which only ceased when the material on which it could thrive was exhausted.

There is a fatalistic notion which has taken root in the minds of parents, that there are certain classes of affections known as "children's diseases," which all must suffer unless they have a natural immunity. This was the feeling in the eighteenth century in regard to small pox, and then, as now, the effort was not so much to avoid infection as to select a favorable season. This is a false philosophy, which must be rooted out of the minds of the people. Let them understand that there are no favorable times for sickness, and then, and not until then, will scarlet fever and diseases of its class, cease to send their hecatombs to death every year. Under the same head we may place diphtheria, whose causes are yet but little known. One thing we know, it is contagious, and the kiss of affection upon the lips of the infected one, has planted the seeds of death in the loving parent or child. The death of Princess Alice, of the royal family of England, is a melancholy instance in point. Her infection was derived from her child, who had been sick of diphtheria. Dr. E. M. Snow says: "It is certain diphtheria is a filth disease, and usually spreads from the influence or effects of foul air arising from localized filth. The contagion of diphtheria never produced any extensive prevalence of the disease without the presence and aid of this local filth." A mortality of 1,469 is due to this cause in Ohio in 1877. How shall we reach the people to tell them of their peril from filth?

In their experience with the second class of diseases,

physicians have won their greatest victories, not in healing, but in the prevention of diseases. In the second class we place typhoid fever, cholera and yellow fever.

Typhoid fever is subject, to a large extent, to sanitary measures. The physician who allows it to spread unchecked, without any effort to ascertain its cause or stay its course, is guilty of a breach of confidence, and is unworthy of his calling. The causes can, in the greatest number of cases, be discovered, and when discovered they can be destroyed. Filth is the parent, or foster-parent of a large class of diseases. Remove filth and you remove the soil on which disease germs thrive. We have known scarlatina and typhoid fever to follow the milkman's cart. The germs of these diseases had found their way to the milk, by its exposure to the poison-laden air, or the water used to clean the cans, or for a less justifiable purpose, had contaminated it.

It is left for every community to choose between cleanliness and health, and dirt and disease. Says a leading journal, "Death dances merrily in dirty streets. By an inexorable law of nature, every great city is called to choose between the street sweeper and the sexton. Even as a matter of economy the sweeper is distinctly preferable, for you can buy many brooms with the price of a single coffin." And this is as applicable to our rural districts as to our cities. Less is to be apprehended from sewer gas and crowd-poisoning in the country, but the danger from poisoned water is greater than in any city which has well regulated water works. It is a fact that in Ohio typhoid fever prevails more extensively among our rural population, in proportion, than in our larger cities. This is to be attributed to the want of sewerage in the smaller towns, and the consequent contamination of water supplies from the proximity of privy vaults and surface privies, and surface water. The distance at which wells may be contaminated, by leeching through the soil, is remarkable. One case is reported in which it was caused at the distance of four hundred feet. Every well is a pit which drains an inverted cone of earth, of varying size, according to the nature of the soil in which it is dug. In the country alone, with one exception, in my professional experience, have I seen typhoid fever spread by attacking in succession the various members of the family. In 1867, typhoid fever broke out at the Ohio State Reform School. Among two hundred and twenty-five boys, fifty-two cases of the fever

occurred. I fully believe the disease was brought thither by a newly-committed boy, who soon became sick. The only spring in use was so situated as to be easily contaminated by surface water flowing from a surface privy which was cleaned periodically. A sudden violent summer shower arose, which swept the matter of the privy into the spring. Soon after the fever broke out in every family on the farm, spreading from the case before mentioned. There were two sources from whence water was procured; the spring already mentioned, and rain-water cisterns. But one of the officers' families suffered, and this immunity I attribute to the use of the cistern-water by the officers, while the boys used that of the spring.

In our larger cities, the erection of water works and the abandonment of wells, has been followed by a notable diminution of typhoid fever. Especially has this been the case in Columbus.

There are no obvious signs by which we can tell whether water is impure and dangerous to life. It may be clear and cool, and sparkle more than the purest spring, and yet carry in every draught the germs of deathly power. As an evidence of this statement, I cite the following cases from Prof. Lord, of the Ohio State University:

Well No. 1. Water cool, clear and sparkling. Standing in limestone. No impurity perceptible. Water, however, on standing, showed the presence of foul smell. On analysis, showed 4.4 per 1,000 of sewage pollution. Five cases of typhoid fever were traced to this well.

Well No. 2. In all respects, as to water and situation, similar to No. 1. The husband in the family died of the fever during the year. Analysis showed sewage pollution.

Well No. 3. Showed 1.8 per 1,000 of fresh sewage pollution. This well stood in such a position as to show there was a stream of water running through it, and the contamination was fresh. Two cases of fever were traced to this well.

Well No. 4. Water found pure. Two persons, however, who habitually used this water, were employed to labor in such a locality that they were obliged to use the water of No. 3, and they took the fever.

I could give many cases in which I am morally certain that impure water has been the cause of fever outbreaks, in otherwise salubrious situations. In these cases, although no sufficient analysis was made, the use of potassic permanganate showed the presence of organic

matter, which is sufficient to condemn any water for potable use.

In 1879 there were reported 921 deaths from typhoid fever in Ohio. The total number of cases may be fairly set down at not less than six thousand. If the duration of each case, during which the constant care of a nurse was necessary, was forty days, the loss of time from this disease would be 1,317 years; the equivalent of the life work of forty men: not to take into account the expenses of medical attendance. The prevention of this waste of human effort is the work of sanitary science.

As an illustration of the greater mortality from typhoid in the rural districts, I present the following tables, premising that by far the larger part of the population of the counties named is in the city which is located in each of their boundaries. Typhoid fever caused, according to the State reports, 4.1 *per cent.* of the total mortality for 1880.

COUNTY.	Population.	City.	Population.	Rate of Mortality.
Cuyahoga	196,937	Cleveland	160,142	3.1
Hamilton	313,345	Cincinnati	255,708	1.7
Franklin	86,816	Columbus	51,665	3.7
Montgomery	75,545	Dayton	38,677	1.5
Lucas	67,388	Toledo	50,143	4.3

An average of 2.8 of the mortality from typhoid fever, in the five counties having the largest population of any counties in the State, as against 4.1 *per cent.* for the State at large. I entertain no doubt that if in these counties the country dwellers could be separated from the city dwellers, the comparison would be still more in favor of those dwelling in the cities. These figures show in a striking manner how our country people sacrifice the advantages which they naturally possess, by their salubrious situations, by allowing filth to accumulate around their dwellings. The population of the counties above given is in round numbers 745,000. To illustrate more forcibly the fact that typhoid fever prevails to a greater extent in the rural districts, I have taken a number of counties seemingly the most favorably situated of those of the State, whose population aggregates 740,000, and I find that typhoid fever in 1880 caused 6.4 *per cent.* of the total mortality.

During the year 1879, 3,830 deaths were reported from consumption, and 1,679 from unclassified lung diseases. Both these classes may be grouped together under one head, and called consumption. Then 19.5 *per cent.* of the total mortality for that year was caused by this disease. More than double that caused by scarlatina and diphtheria, two diseases most dreaded by the community.

Is this enormous waste of human life beyond our control? Must we sit idly by, and see the dreadful destruction go on? Our notions, as to the etiology of consumption, need revision. The physicians of Ohio, with few exceptions, disbelieve the doctrine of the infectiousness of consumption. Experiment and clinical observation are daily multiplying the proofs which will ultimately conduct us back to the old opinion entertained by the ancients: that consumption is contagious. This was the opinion of all our authorities down to the time of Sir Thomas Watson. His lectures, which were read with delight by a generation of now active practitioners of medicine, were the principal cause of the present aspect of medical opinion on this subject. In the south of Europe, there still exists the same dread of post-mortems of the bodies of consumptives which Morgagni confesses to have felt, both in his youth and age. And that this dread is not without foundation, is shown by the experience of Leannec, recorded Vol. II, page 180, Traite de L'Auscultation Mediale, Paris, 1837. How much this accidental inoculation may have had to do with his subsequent death at the early age of 45, cannot be told.

Cohnheim says "the tuberculous poison probably in most cases enters the system with the respired air." If this poison can thus enter the system, and set up its morbid action, consumption is a contagious disease communicable by germs which float in the atmosphere. Tubercle is no longer to be known as a "pitiable product" (Bennett), but as a vigorous growth, capable of throwing off infecting particles of protoplasm, which may germinate when tney fall on fruitful soil. Villemin, Waldenburg, Sanderson, and others, have made successful inoculation experiments. Tappeiner, in 1877 and 1878, made a series of experiments, which have been of the highest value to pathology. "With the sputa of consumptives and water he prepared an emulsion, and caused dogs, for an hour and one-half each day, to inhale this liquid by pulverization. He chose the dog because of his feeble predisposition to tubercle. He treated, in this way,

eleven animals during periods varying from three to six weeks. With two exceptions, these dogs preserved the aspect of health during the experiments. They suffered no diminution in weight, but the autopsies established in all, except two cases, which were a little doubtful, miliary tuberculosis of both lungs. Cattle are affected by tuberculosis which is communicable by inoculation, by exposure to the emanations from the lungs of affected animals, or by feeding in the same stall where a sick one has previously fed. The calves which drink the milk furnished by tuberculous cows, become victims to the same morbid process. This disease is communicable to man. This subject has been exhaustively studied under the name of "bovine tuberculosis," by Creighton. The clinical aspect of "bovine tuberculosis" is almost identical with that of acute miliary tuberculosis in man, but its morbid anatomy is so peculiar as to render a post mortem diagnosis possible in the human subject. Pigs and other animals fed on the milk of tuberculized cows become tuberculous. We have here a possible solution of the cause of increased mortality in bottle-fed children, from tuberculous diseases.

I quote the leading characteristics of the morbid anatomy of bovine tuberculosis. The lungs contain closed and open cavities. "Flat, round, or oval nodules, of the size of duck weed leaves, on the under surface of the diaphragm where it comes in contact with the liver being the favorite situation. * * * The base of the lung is covered with a number of flat, round, leaf-like bodies, attached to the surface by a slightly marked pedicle; they are for the most part membranous, and the edges are sometimes turned up, thereby showing the clear space between the pleura and the under surface of the leaf. * * * The formations around the sharp margins of the lung are very commonly met with, and they are sometimes the only indication of the disease present on the serous membranes. * * * These formations on the pleura, and more particularly on the thin margins of the lung, are something special and distinctive, appears beyond a doubt." (Creighton, *Bovine Tuberculosis*, London, 1881, page 53, *et seq.*) Bovine tuberculosis may be communicated to man by the raw or cooked flesh, and by the milk of tuberculized animals. "That tuberculosis is rapidly on the increase, no well informed veterinarian will deny. It ranks among the few great scourges of the land; and though thus far, our losses in live stock prop-

erty have been largely due to other plagues, which sweep their victims off in a manner to be seen by all, yet the ravages of this disease can only be realized * * * when we take into account the slow but certain decimation of many of our best herds, the destruction of our animal supplies, and also the danger to human life which can no longer be considered chimerical;" (Diseased Meat, etc., page 5, *et seq.*, by N. Cressy, M. D., V. S., Ph. D.)

Dr. Heath, cited by Cullimore (Consumption as a Contagious Disease, page 42, *et seq.*), says that if cows were allowed to die from natural causes, the proportion succumbing to tuberculosis would be quite as great, and probably much greater, than in the human subject, * * * and it is the opinion of another eminent authority that there are few animals that have been kept for any length of time in cow-sheds, and fed and milked in the usual manner, which are not more or less affected, especially if the cow-houses are bad. The serious aspect of the matter, of course, is that it is probably one of the sources of this terrible scourge of human life; a disease which causes from a seventh to a fifth of all deaths. "Tuberculosis in the porcine species is always of the acute variety. The flesh of the tuberculous pig is more dangerous than that of the cow. * * It, from its acute course, is more easily detected." (*Op. cit.*) "There is sufficient evidence that tuberculosis may be produced by using the milk of tuberculous cows, to justify the employment of careful preventive measures."—(Flint's *Practice*, page 50, 5th Ed.)

Bovine tuberculosis is not unknown among the herds of Ohio. Prof. N. S. Townsend, of the State University, has kindly sent me the following note of a post-mortem of a cow: "The lungs were nowhere adherent to the sides. There was no fluid in either pleural cavity, but on the left side were numerous granular masses, *each attached by a pedicle, spread out flat* and wide between the walls of the chest and lungs. The bronchial glands were enlarged. * * * Her disease was manifestly tubercular consumption."

A study of the chart of the distribution of consumption, prepared from the 9th census, shows that Ohio is divided into three unequal and irregular divisions, which are marked by different ratios of mortality from consumption. The first division consists of the lake counties,

those on the western border of the State and those of the east and south-eastern portions of the State, which include the mining regions east of the territory drained by the Scioto river, as well as those drained by the Mahoning, Tuscarawas and Muskingum rivers. This section has 20 *per cent.* of the total mortality caused by consumption. The second division includes Cuyahoga and Hamilton counties, and that region of the State drained by the Scioto river. The borders are somewhat irregular. This section has a mortality of 14 *per cent.* from consumption. The third division is composed of Mercer, Van Wert, Auglaize, Allen, Hardin and Logan counties, which have a mortality from consumption of 9 *per cent.* These territories, except the last, cross all geologic systems of the State, and contain every variety of soil. They contain alike farming, mining, and manufacturing communities, and hence we cannot appeal, with confidence, to the physical features of the soil, or differences in social conditions, to account for the differences in mortality. The moisture of the atmosphere, that rises from large bodies of water, has been deemed a prominent etiological factor, and yet Cuyahoga has 6 *per cent* less of mortality from consumption than counties east or west of it.

Thin soil, with water approaching the surface, has been thought to be a cause of consumption; yet the counties that are less perfectly drained than the others, in that region, have the lowest rate of mortality in the State. I have found from the study of the reports of several successive years that the mortality from consumption remains almost uniform in these districts from year to year. To explain the continuous rate of mortality in these regions, in addition to those causes which are ordinarily thought to cause consumption, I must add another, the infectiousness of the disease.

Consumption does not prevail in newly settled sections of our country; but once having become located, then it is never dislodged. The infectious character of consumption is a fact of primary importance. The secondary elements in its etiology—heredity, insalubrious surroundings—have received the greatest attention from the profession, while the greater danger has been neglected. The evidence is daily increasing, which, in the end, will show, I believe, that consumption may be brought within the realm of disinfectant and other hygienic measures.

The following are the conclusions of Musgrave Clay,

deduced from one hundred and eleven observations made upon the contagious transmission of consumption:

1. Phthisis, or tuberculosis, may be acquired by contagion.

2. The facts actually known are too few, and frequently have so little relation to each other, to enable us to determine with precision, the circumstances under which the contagion can become active.

3. Life in common, especially during the night in an illy ventilated apartment, sexual relations, gestation in the case of a tuberculous husband, the youth of the healthy subject, sedentary life of the exposed subject, advanced state of the local lesions in tuberculous subjects, are conditions which may be considered favorable to contagiousness.

4. The facts observed, if not rigorously demonstrating the contagiousness of consumption, are nevertheless of such a character as not only to justify, but to compel, all the hygienic precautions which these conclusions suggest.

5. The manner in which the contagion occurs, in the present state of science is undetermined.

6. It is probable that it is due to the suspension in the air of particles resulting from the desiccation of the various excretions of the phthisical patient (sputa, sweat, etc.).

7. It is possible that the air thus contaminated does not become noxious, except when the particles which it contains enter into the bronchial ramifications, and come in contact with surfaces accidentally eroded or irritated, and consequently absorbant; nevertheless this is a theoretical view of the author, which remains to be verified.

8. It is probable that contagion by alimentation is possible. The presumptions in favor of this view are sufficient to cause us to take the matter into serious hygienic consideration.—*Etude sur la Contagiosite de la phthisic pulmonaire*, Paris, 1879.

Says Jaccoud: "The transmission of tuberculosis has been demonstrated by inoculation made experimentally ordinarily, but which may by chance, be realized by an accidental wound, by inhalation of air more or less laden by diffusible elements furnished by the patient's products of expiration, particles of sputa; perhaps also, but less certainly, by sudoral evaporation. The dangers are realized in their maximum by nightly cohabitation, especially by sleeping together in the same bed, and are more to be feared when ventilation is imperfect. These

etiological notions impose upon the physician new obligations, to take great precautions as to the surroundings of his patients. He ought not only to treat them, but he ought in every way possible to preserve from all danger of infection, those persons who are habitually in contact with them, and counsel prudence in the attentions born of affection. There should be good ventilation of the sick room, and twice daily pulverizations of carbolic acid, or benzoate of soda. There should be kept constantly in the vases which receive the sputa, a disinfectant fluid. The linen and clothes soiled by the expectorations should be disinfected. These are the most important obligations. There should be a separation of husband and wife, to whom there should be neither a common bed nor a common chamber. Infants should, under no circumstances whatever, be allowed to occupy the room of a person suffering from consumption, however little the disease is advanced."—Jaccoud, *Phthisie Pulmonaire*, 1881.

During the past winter there has been great alarm in Europe about trichina in American pork. The subject of trichinosis was very fully reported upon by Asst. Surgeon Glazier, to the Treasury Department, U. S. Upon the conclusion of the investigation, a circular was issued by the Secretary of State, for the purpose of allaying alarm about pork, and to prevent the destruction of a great American industry. The following is a portion of the circular:

Eighth—That the percentage of American hogs infected with trichinæ (though this question is thus far largely one of supposition) is in all probability, by reason of the superiority of the breed and feed, much less than that among the hogs in any other country.

Ninth—That the freedom from trichinosis of the two great pork consuming centers of the West, Chicago and Cincinnati, furnishes the strongest possible evidence of the purity of American pork. In Chicago, for a series of years, in which 40,000 deaths were reported with their causes, only two cases of trichinosis were reported. In Cincinnati, during the same period, not one case was reported.

Tenth—That the reported cases of trichinosis have resulted from eating uncooked meat, shown to be inferior or rejected, and that thoroughly cooking entirely destroys this parasite and removes all danger, in this regard, from eating pork."

The above reads to us as if the sheen of the "almighty dollar" had caused an obliquity of vision in the person who penned it. There is at least a disposition to announce conclusions unsupported by facts. That the breed has anything to do with the liability to infection of hogs with trichina, I do not believe; for the disease has been found among the wild boars of Syria and China, as well as the Chester Whites and Berkshires of the United States.

Because no deaths have been reported from trichinosis in Chicago or Cincinnati, to assume there were no cases of trichinosis, is a logical fallacy.

Our freedom from attacks of trichinosis, no doubt depends upon our thorough cooking of pork before it is eaten. But in spite of this, away from our "pork consuming centers," in the rural districts of Ohio, trichinosis has occurred. During the last winter, three cases occurred in the practice of Dr. M. C. Cuykendall, of Bucyrus. The parasite was recognized in some ham which had been cured at home. Specimens of this meat were sent to me, which were literally swarming with the worms. In a recent number of the *Chicago Medical Review*, Dr. Christian Fenger reports two cases of trichinosis. In this report he uses the following language: "As cases of this disease are far from uncommon in this part of the country, * * * I publish the following two cases to enunciate my views on the subject."

Of 2,044 cases collected by Glazier, 231 died: a mortality of 7.6 *per cent.* This shows it is not more fatal than typhoid fever,—contrary to the opinion usually entertained. From the similarity of its progress to some other acute diseases, no doubt many cases of trichinosis occur which are unrecognized.

One third of the sickness and death in Ohio is caused by diseases which are clearly preventable. The prevention of sickness and death is the function of sanitary Science. I have shown that disease and death are destructive to capital. Their prevention saves capital, and Sanitary Science becomes a productive industry.

The establishment of a State Board of Health in the State of Ohio, is demanded by political economy, and the humanitarian spirit of the times. This Board should be composed of men of known scientific ability, who should be appointed regardless of their political opinions. To this end the Medical Profession should use its influence, and not cease till the purpose is accomplished.

I here append a table which shows the number of deaths and births per 1,000 for each county in the State. The general average is less than in 1870 for births.

COUNTIES.	Deaths in Ohio in 1880 per 1,000 population, by Counties.	Births in Ohio in 1880 per 1,000 population, by Counties.	COUNTIES.	Deaths in Ohio in 1880 per 1,000 population, by Counties.	Births in Ohio in 1880 per 1,000 population, by Counties.
Adams	8.3	19.	Logan	9.	19.8
Allen	10.	25.6	Lorain	10.	16.8
Ashland	6.5	17.	Lucas	8.5	20.4
Ashtabula	9.1	14.6	Madison	8.	20.45
Athens	6.5	23.	Mahoning	7.	20.7
Auglaize	9.3	28.7	Marion	9.6	24.95
Belmont	7.7	20.8	Medina	9.6	19.9
Brown	8.6	20.6	Meigs	7.4	23.
Butler	10.	16.4	Mercer	10.5	29.
Carroll	7.8	23.8	Miami	8.8	19.5
Champaign	8.7	20.	Monroe	9.2	30.
Clarke	8.	19.	Montgomery	14.	22.5
Clermont	8.	20.	Morgan	8.9	23.4
Clinton	8.	19.	Morrow	6.7	20.3
Columbiana	10.8	26.	Muskingum	10.	20.
Coshocton	7.5	21.6	Noble	7.	26.8
Crawford	9.	23.9	Ottawa	8.2	23.3
Cuyahoga	8.4	21.6	Paulding	12.	30.8
Darke	10.	27.5	Perry	7.	26.
Defiance	7.	24.5	Pickaway	9.4	22.6
Delaware	7.5	19.	Pike	8.	26.7
Erie	8.7	21.4	Portage	10.	15.8
Fairfield	7.7	19.8	Preble	9.	18.5
Fayette	6.8	21.2	Putnam	10.	27.
Franklin	7.	16.	Richland	7.7	18.
Fulton	8.8	22.6	Ross	8.	21.5
Gallia	7.	24.	Sandusky	7.	20.8
Geauga	11.	17.	Scioto	12.	26.
Greene	8.	16.4	Seneca	9.	22.7
Guernsey	7.	20.	Shelby	9.	23.8
Hamilton	8.5	19.5	Stark	6.3	18.5
Hancock	10.	28.	Summit	7.	19.6
Hardin	10.	23.4	Trumbull	6.7	20.5
Harrison	6.	18.3	Tuscarawas	7.	26.6
Henry	6.	18.5	Union	9.	27.
Highland	8.8	21.6	Van Wert	9.	20.3
Hocking	7.	25.7	Vinton	7.	30.
Holmes	8.9	27.7	Warren	9.8	39.
Huron	9.	20.5	Washington	8.5	21.7
Jackson	7.	27.2	Wayne	9.	12.3
Jefferson	8.3	18.	Williams	9.5	32.3
Knox	9.	19.6	Wood	8.	15.
Lake	8.5	12.5	Wyandot	7.	28.
Lawrence	6.	25.			
Licking	7.9	18.15	Average	8.6	19.7

The State demands the allegiance of her citizens, and may call for the sacrifice of their lives in her defense. Has the State no duty to her citizens? Most of the European governments, by Sanitary police and legislation, try to guard the life and health of their subjects. Massachusetts, Michigan, Illinois, West Virginia, Colorado, California, Tennessee, Kentucky, Louisiana, Arkansas, have established State Boards of Health. Ohio, the third State in the Union, with a population as intelligent as that of any State, has done nothing in this direction.

CERTAIN QUESTIONS

IN

The Mechanics of Bone.

By D. D. BRAMBLE, M. D.,

Cincinnati, O.

Imagine this problem presented a mechanician; that he be required to supply an apparatus the size and weight of the human body; that he be not required to do aught else than provide what corresponds with the bones, ligaments and joints;—the contracting muscles, sentient and motor nerves, and vascular system, as well as nutritive, thermal and excretory functions, and directing and guiding principles, to come from another hand;—could human ingenuity contrive a mechanical device that would be able to stand the simple physical strain to which the structures alluded to are momentarily subjected? In other words, is there anything peculiar, in a simple physical point of view, in the mechanics of those crude and seemingly gross structures, the bones of the skeleton? If not, why should a mechanician find it impossible to construct a mechanical appliance that would do the work and stand the strain imposed on the osseous frame-work by the demand of every-day life?

To be brief, the physical problem the mechanic finds himself unable to solve is the conjunction of a shock-absorbing mechanism with the freely moving but powerful extremities. The moving organs, the muscles, must have recesses for lodgement and eminences for attachment,

as well as an osseous structure to rest on that will supply them with the advantages of leverage, while the bones themselves must have a certain strength with but a given weight—powerful shafts and expanded ends, and yet but a limited quantity of bony tissue. Think of any ordinary, or even extraordinary, mechanism mounted on jointed supports moving by steps as does man's body—how many steps could be taken before the machine would be wrenched to pieces by the rough jars it would receive? Yet in the animal frame—human and comparative—this very problem is daily solved, without attracting the attention its beauty and intricacy would seem to challenge.

How happen the bones to stand an amount of physical concussion—what enables them to absorb that amount of continuous shock—which would prove fatal to the same amount of animal matter differently arranged? In the last two words is to be found the key to the problem; it is in the manner in which the bony structures are arranged, that we have the perfection of the osseous system as a shock-absorbing apparatus. We are all aware that the beam that passes across the rivulet—it matters not of what it is constituted—is a type of structure in which the amount of material employed is greatly in excess of the weight to be supported. The ingenious mechanic can take the tree trunk that makes but a rude and imperfect bridge, and by cutting it into longitudinal sections, and arranging the latter as flangs held together by webs, he constructs beams that will make a bridge capable of sustaining a thousand-fold more weight. The operation, through untold ages, of physical forces acting upon the osseous system of the animal kingdom, has developed in the bones of living creatures such an adaptation of beams, pillars, arches and abutments, that the attentive study of the structure of segments of the long and short bones unfolds mechanical devices worthy of the admiration of the skilled mechanician.

The subject is one so vast, and the time I feel like occupying so short, that I will cite but one illustration of the facts I have referred to, and for further development of the subject will ask critical study of the specimens I herewith present you.

In the hollow pillar we have the most advantageous method of arranging a given amount of material in order to support the greatest degree of weight. This fact is well known. It is not so well known—perhaps because

the practical illustrations are less numerous—that a cylindrical abutment makes the best support for a series of elastic arches; yet that it does so is unquestionable, and were a mechanic required to devise a support which would possess the maximum of strength at its center, while at the same point it should occupy the least space, he would undoubtedly select a hollow cylinder; just as were it necessary for him, in addition, to make this support receive and absorb shocks, he would send forth from all points of the center of this hollow cylinder an innumerable series of elastic arches. But, as this process of shock-absorption cannot be combined with the principle of the maximum of strength in the minimum of space, the hollow cylinder would have to be enlarged, and instead of the compact material being arranged as a circle embracing a cavity, this material would necessarily require to be broken up into elastic arches extended over the expanded space needed under the new conditions. In this way the intelligent mechanic would comply with the peculiar conditions of his problem, and would produce a support, cylindrical and contracted in the center, and enlarged, but filled with elastic arches at either extremity. This apparatus would then be calculated to successfully resist weights and absorb shocks which, without the arrangement alluded to, it would be utterly unable to withstand.

A series of sections of any one of the long bones—especially the femur—will illustrate admirably the manner in which the great problem of shock-absorption is solved by nature's efforts. That no mechanical device human hands can construct, will sustain even so simple a test as that of the shocks met with and unconsciously absorbed by the osseous system of each living being in daily life, furnishes us with a remarkable illustration of the wonderful harmony and adaptability of the laws of nature, and supplies us with an illustration of the deep significance underlying what at first sight would be taken for a most prosaic feature in the animal economy.

TRANSACTIONS

OF THE

THIRTY-SEVENTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD AT

COLUMBUS,

June 13th, 14th, and 15th, 1882.

COLUMBUS, O.:
GAZETTE PRINTING AND PUBLISHING HOUSE.
1882.

OFFICERS FOR 1882-3.

PRESIDENT.

C. P. LANDON, M. D., Westerville.

VICE-PRESIDENTS.

1st. E. SINNETT, M. D.....Granville.
2d. A. C. MILLER, M. D.....Cleveland.
3d. N. GAY, M. D.....Columbus.
4th. W. B. HEDGES, M. D.....Delaware.

SECRETARY.

GEO. A. COLLAMORE, M. D.....Toledo.

ASSISTANT SECRETARY.

M. F. LEE, M. D.....Columbus.

TREASURER AND LIBRARIAN.

T. W. JONES, M. D.....Columbus.

COMMITTEES.

ARRANGEMENTS.

REUBEN A. VANCE, M. D., W. T. CORLETT, M. D.,
A. C. MILLER, M. D., J. C. HUBBARD, M. D.,
I. N. HIMES, M. D.

FINANCE.

JOHN DAVIS, M. D., GEO. MITCHELL, M. D.,
DAVIS HALDERMAN, M. D., S. S. THORN, M. D.,
R. P. EVANS, M. D.

ETHICS.

W. J. SCOTT, M. D., W. W. JONES, M. D.,
JNO. A. MURPHY, M. D., H. CULBERTSON, M. D.,
J. C. HUBBARD, M. D.

PUBLICATION.

J. F. BALDWIN, M. D., J. H. LOWMAN, M. D.,
J. C. CULBERTSON, M. D., W. H. H. NASH, M. D.,
JOSEPH WAGGONER, M. D.

LEGISLATION.

D. N. KINSMAN, M. D., TOLAND JONES, M. D.,
ENOCH PEARCE, M. D., H. J. DONAHOE, M. D.,
A. H. BRUNDAGE, M. D.

ADMISSIONS.

W. H. MUSSEY, M. D., J. N. BEACH, M. D.,
J. B. THOMPSON, M. D., P. P. POMERINE, M. D.,
N. H. SIDWELL, M. D.

THIRTY-SEVENTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD AT

COLUMBUS, JUNE 13TH, 14TH, AND 15TH, 1882.

The Society was called to order by the President, Dr. Starling Loving, at 2 o'clock.

After prayer, the President-elect was introduced, and spoke as follows:

Fellows of the State Medical Society:

I congratulate you on the auspicious opening of this, your thirty-seventh annual session.

Permit me to express my appreciation of the honor you have conferred in electing me to the position which I now assume.

The compliment is the more grateful, as it was not solicited, and was wholly unexpected. I have been a member of the Society since 1859, have served on several committees, and contributed a few unimportant papers, but never in my most ambitious thoughts had I contemplated the possibility of becoming its President. I confess to having been an unworthy member in that I have done so little to forward the objects of the Society and the cause of Medical Science in general; but you have shown your generosity in overlooking my short-comings and in so doing have inspired me with the determination to endeavor, if health and life be spared, to greater effort in the future.

Permit me, on behalf of the medical profession, to extend to you a cordial greeting, and to hope that hence-

forth we shall have the pleasure of welcoming you every year in the middle of this beautiful month of June—that you will make Columbus your permanent meeting place.

In this I am sure I utter the wish of every physician of this city and of the region around. It is true we cannot offer you such inducements as Cincinnati or Cleveland, nor have we the seductive pleasures of Put-in-Bay, but we promise you hearty welcome and willing help. Besides, you have wandered these many years and have not found rest, and it is time you had a safe and permanent asylum.

Since our last meeting, several of our brethren have passed the dark river, and henceforth will be known to us by their works only. We shall miss their greetings until we also join the "great society," presided over by the Grand Physician. While they have gone, their good works remain as beacons for our guidance and for our emulation. Let us see to it that when our summons comes it may be said of us as of them—"a good man is gone; he has abided by thy code, give him his reward."

Appreciating the necessity, I have, in connection with the Secretary, used every effort to have the present a successful session, and have been rewarded by the promise of a large number of essays by talented members, who, I hope, have all found it convenient to be present with what may prove better than their promises, and with the resolution to mark the year 1882 in red letters in our Calendar.

The Executive Committee, to increase the interest of this meeting, sought and secured the assistance of Professors Orton and Norton, of the State University, distinguished scientists and teachers, who, though not belonging to the Society are, in a measure, co-laborers with its membership, and in hearty sympathy with its objects. The topics which they propose to discuss are of the utmost importance, and we shall undoubtedly be profited by the papers which they will read at the appointed hours.

The Executive Committee has also made arrangements for the comfort and entertainment of the members which I feel sure must prove satisfactory.

I am comparatively unaccustomed to preside over deliberative bodies, but feel that I shall have your co-operation and sympathy, and that there can be no great diffi-

culty in ruling the discussions of a society of gentlemen such as this.

Let us now go to our work and each try to gain something from his neighbor's special treasury; and during the hours of recess, renew old friendships and make new ones.

The Committee of Arrangements reported as follows:

Your Executive Committee, beg leave to report as follows:

The Hall has been secured for the entire session for the sum of thirty dollars.

Arrangements have been made with all the Railroads for the reduction of fares, as has been announced in a circular by your Secretary.

The election of officers shall take place as usual, a special order for Wednesday, at 2 P. M. The address of the retiring President shall be delivered immediately after election of officers.

Prof. Edwin Orton has kindly consented to deliver a lecture in this Hall, at 8 o'clock this evening; Subject, "The Relation of the State to the Public Health."

The Trustees of the Deaf and Dumb Asylum, through your Committee, extend an invitation to this Society to attend an entertainment and banquet at their Institution, on Wednesday evening, at 8 o'clock.

During the same evening, Dr. J. R. Black, of Newark, will read a paper; Subject, "Preventable Diseases."

Respectfully submitted

THOS. C. HOOVER,
Chairman.

Reports of the Librarian and Treasurer, Dr. T. W. Jones, and the Secretary, Dr. J. F. Baldwin, were presented, and were referred to the Finance Committee.

On motion of Dr. X. C. Scott, the *annual dues* for the year were placed at $1.

The Committee on Publication reported as follows:

Your Committee on Publication report that they held one meeting, and after a discussion of papers presented, left the final decision with the editor of the *Journal*, with one or two exceptions, and adjourned *sine die*.

H. G. LANDIS, *Chairman.*

On motion of Dr. X. C. Scott the report of the Committee on Codification and Revision was made the special order for Wednesday morning.

Papers were then read as follows: Dr. H. G. Landis, of Columbus, on the "Progress of Obstetrics and Gynecology."

Dr. Reuben A. Vance, of Cleveland, on "Surgery of the Arteries."

Dr. D. N. Kinsman, of Columbus, on the "Etiology of Consumption."

Dr. J. B. Schueller, of Columbus, was added to the Committee on Admissions.

Adjourned.

EVENING SESSION.

The Society was called to order by the President, who introduced the orator of the evening, Professor Edward Orton, of the State University. The subject of the address was the "Relation of the State to Public Health." At the close of the lecture, Dr. Wm. Morrow Beach offered the following resolution, which was unanimously adopted:

Resolved, That the thanks of this Society be hereby tendered to Professor Orton for his address, and that he be requested to furnish our Secretary a copy for publication in our Proceedings.

On motion of Dr. D. N. Kinsman, it was further resolved to publish 1,000 extra copies for distribution.

Adjourned.

SECOND DAY—MORNING SESSION.

Dr. X. C. Scott moved that the Report of the Committee on Codification and Revision be referred to a special Committee of five, to be appointed by the chair. *Carried.*

Committee appointed consisted of Drs. X. C. Scott, W.

M. Beach, D. Little, J. B. Thomson and W. H. Mussey.

Dr. Vance moved that a Committee of five be appointed to confer with the Chairman of the Committee of Arrangements of the American Medical Association in regard to a proper reception and entertainment of that Association at its meeting next year at Cleveland. *Carried.*

Committee appointed consisted of Drs. Reuben A. Vance, J. C. Hubbard, A. C. Miller, W. T. Corlett and I. N. Himes.

Papers were then read as follows:

Dr. W. T. Corlett, of Cleveland, "Etiology of certain Cutaneous Diseases."

Dr. N. P. Dandridge, of Cincinnati, "Surgical Diseases of the Genito-Urinary Organs."

Dr. P. S. Conner, of Cincinnati, "External Perineal Urethrotomy."

Prof. Sydney Norton, of Columbus, "Drinking Waters and their Contamination."

Dr. X. C. Scott, Chairman of Committee on Constitution reported, and the report was on motion received, and the Constitution as reported adopted.

Adjourned.

AFTERNOON SESSION.

Society called to order by the President.

Election of officers resulted as follows:

President—C. P. Landon, Westerville; *Vice Presidents*—1st, E. Sinnett, Granville; 2nd, A. C. Miller, Cleveland; 3rd, N. Gay, Columbus; 4th, W. B. Hedges, Delaware. *Secretary*—Geo. A. Collamore, Toledo; *Assistant Secretary*—M. F. Lee, Columbus; *Treasurer*—T. W. Jones, Columbus.

On motion a Committee was appointed to nominate members of the Standing Committees, consisting of Drs.

A. C. Miller, W. H. Mussey, W. B. Hedges, W. J. Scott, and W. M. Beach.

Society by vote agreed to meet at Cleveland in 1883, at the time of meeting of the American Medical Association.

Address of President, Dr. Starling Loving, then followed.

Dr. E. H. Hyatt, offered the following resolution, which was laid on the table, but subsequently adopted:

Resolved,—1. That the Committee on Publication be required to collect and publish in bound volume the transactions of last year.

2. That in the future the time-honored practice of publishing its transactions in book form be adhered to.

3. That the volume for last year be bound with the volume for the current year.

The Committee on Nominations reported as follows:

STANDING COMMITTEES.

FINANCE.

John Davis,	Dayton,	Five years.
Davis Halderman,	Columbus,	Four years.
Geo. Mitchell,	Mansfield,	Three years.
S. S. Thorn,	Toledo,	Two years.
R. P. Evans,	Franklin,	One year.

ETHICS.

W. J. Scott,	Cleveland,	Five years.
Jno. A. Murphy,	Cincinnati,	Four years.
W. W. Jones,	Toledo,	Three years.
H. Culbertson,	Zanesville,	Two years.
J. C. Hubbard,	Ashtabula,	One year.

PUBLICATION.

J. F. Baldwin,	Columbus,	Five years.
J. C. Culbertson,	Cincinnati,	Four years.
J. H. Lowman,	Cleveland,	Three years.
W. H. H. Nash,	Columbus,	Two years.
Joseph Waggoner,	Ravenna,	One year.

LEGISLATION.

D. N. Kinsman,.....Columbus,.....Five years.
Enoch Pearce,.....Steubenville,.....Four years.
Toland Jones,.....London,.....Three years.
H. J. Donahoe,.....Sandusky,.....Two years.
A. H. Brundage,.....Xenia,.....One year.

ADMISSIONS.

W. H. Mussey,.....Cincinnati,.....Five years.
J. B. Thompson,.....Columbus,.....Four years.
J. N. Beach,.....West Jefferson,.....Three years.
P. P. Pomerine,.....Berlin,.....Two years.
N. H. Sidwell,.....Wilmington,.....One year.

This report was adopted, and the Secretary, by instruction, cast the ballot for their election.

Papers were then read as follows:

Dr. S. C. Ayres, of Cincinnati, "Retinitis Albuminurica."

Dr. Philip Zenner, of Cincinnati, "A case of Hemiplegia, with remarks: Secondary Degeneration of the Pyramidal Tracts."

Dr. W. H. Mussey read a description of some instruments devised by himself, for the scraping of the male bladder for villous growths. He also reported a case of removal of the astragalus for necrosis.

Committee on Finance made the following report, which was adopted:

Your Committee on Finance beg leave to make the following report:

Amount on hand from last year, after deducting the Treasurer's salary for three years.....	$766 04
Interest from last year.....	38 30
Received from 303 members, as dues from last year.....	303 00
Received from 71 delinquent members.....	344 00
Received from sale of old transactions.....	7 45
Total.....	$1,458 79

DISBURSEMENTS.

To J. F. Baldwin, for salary and for incidental expenses	$54 64
To J. F. Baldwin, for publication of *Journal*	374 00
For incidental expenses	81 05
Total	$509 69
Balance on hand,	$949 10

Your Committee recommend that the incidental expenses set forth in the Secretary's report, be paid.

Respectfully Submitted

D. HALDERMAN,
Chairman.
A. HURD,
C. E. BEARDSLEY.

Adjourned.

EVENING SESSION.

This was held at the Deaf and Dumb Asylum, where Dr. J. R. Black delivered his lecture on Preventing Diseases; after which the Society partook of an excellent banquet, furnished by the Trustees of the Asylum.

THIRD DAY—MORNING SESSION.

Society called to order by the President. Dr. G. S. Franklin, of Chillicothe, read a paper on "Public Charity and the Medical Profession." He then offered the following resolution, which was referred to the Committee on Legislation:

Resolved, That it is the duty of this Society to appoint a Committee who shall immediately investigate the present legal status of township medical relief to the poor, and if it be outrageously unjust to the profession, to advise, at this meeting, if possible, some method of redress to be urged upon the next session of the Legislature.

Papers were then read as follows:

Dr. E. B. Pratt, of Mount Sterling, "Treatment of Inflammation of Knee-joint."

Dr. W. Morrow Beach, of London, "Achievements and Failures in the Medical Art."

Dr. W. B. Davis, of Cincinnati, "Report on Materia Medica and Therapeutics."

Dr. Joseph Eichberg, of Cincinnati, "Report on Progress of Laryngology,"

Committee on admissions reported in favor of admitting the following named persons as new members, and report was adopted. [This report is here consolidated.]

NEW MEMBERS.

I. D. Axline,	Shawnee,	Med. Col. of Ohio.
A. M. Beers,	N. Comerstown,	University of Pa.
A. M. Bleile,	Columbus,	Starling Med. Col.
H. M. Brown,	Williamsburg,	Med. Col. of Ohio.
J. W. Bunn,	West Union,	Starling Med. Col.
E. C. Carr,	Coshocton,	M. D'p't Wooster Un.
W. T. Corlett,	Cleveland	M. R. C. P. Lond., M. D'p't Wooster Un.
F. H. Darby,	Morrow,	Med. Col. of Ohio.
W. C. Davies,	Granville,	University of N. Y.
W. C. Denman,	Marion,	Med. Col. of Ohio.
Joseph Eichberg,	Cincinnati,	Miama Med. Col.
A. E. Evans,	Columbus,	" " "
S. Ewing,	Plain City,	Starling Med. Col.
J. W. Ferguson,	Rittman,	M. D'p't Wooster Un.
G. F. Foster,	Kingston Cen.	Starling Med. Col.
R. D. Gibson,	Youngstown,	Cleveland Med. Col.
W. W. Glenn,	Bloomingburg,	Starling Med. Col.
D. W. Green,	Dayton,	Med. Col. of Ohio.
W. H. Hall,	Springfield,	Miami Med. Col.
Geo. P. Ikert,	East Liverpool,	Cin. C. Med. and Sur.
A. P. King,	London,	Bellevue Hosp. M. C.
C. P. King,	Newark,	Jefferson Med. Col.
E. Y. King,	Richwood,	Bellevue Hosp. M. C.
B. S. Leonard,	West Liberty,	Med. Col. of Ohio.
David Little,	Logan,	Starling Med. Col.
S. L. McCurdy,	Dennison,	Columbus Med. Col.

C. R. Merriman,.....Akron, ...Cleveland Med. Col.
T .B. Norris,.....Alton,.....Starling Med. Col.
B. M. Ricketts,.....Ironton,.....Miami Med. Col.
W. M. Ross,.....Millersburg, ...Wooster University.
A. Sabine, ...Marysville, ...Jefferson Med. Col.
Joseph Sager,.. ..... N. Washington,Starling Med. Col.
Robert Sattler,..... Cincinnati, ...Miami Med. Col.
S. B. Sheldon,.....Five Mile,..... " " "
S. P. Snyder,.....New Bedford,...Wooster University.
J. Q. Southard,.....Raymond, ...Cleveland Med. Col.
G. W. Vickers,.....Wapakoneta, ...Starling Med. Col.
David Watson,.....Bellefontaine,...Cleveland Med. Col.
Philip Zenner,.... ....Cincinnati,.....Miami Med. Col.

Adjourned.

AFTERNOON SESSION.

Dr. A. C. Miller moved that the new Constitution be published in the Transactions, and that five hundred extra copies be printed for future use. *Carried.*

On motion of Dr. Loving, the Librarian was instructed to distribute the extra copies of Prof. Orton's address as follows: One to each member of State Medical Society; one to each member of the Legislature, and one to each County Clerk and Probate Judge.

Papers were read as follaws:

Dr. Geo. W. Garrison, of Utica, "Cancer."

Dr. Geo. A. Collamore, of Toledo, "Report on Progress of Medicine."

Dr. Albert M. Bleile, of Columbus, "Digestion."

Dr. W. H. Mussey moved that the thanks of the Society be hereby tendered to the Trustees of the Deaf and Dumb Asylum for their royal entertainment last night. *Carried.*

Also, that thanks be returned to the retiring officers for their faithfulness and zeal in the discharge of their duties. *Carried.*

Dr. W. J. Scott offered the following resolution, which was adopted:

Resolved, That it is the sense of this Society, that our Legislature should pass a law to organize a State Board of Health, and to regulate the practice of medicine.

The Committee on Medical Societies reported that the following Societies were represented by delegates:

Butler County Medical Society..... A. N. ELLIS.
Hamilton " " " .....N. P. DANDRIDGE.
Mahoning " " " .....R. D. GIBSON.
Miami " " " .....J. F. GABRIEL.
Brown " " " .....S. B. SHELDON.
Highland " " " H. WHISTLER, W. W. SHEPHERD, J. L. WILSON.
Clermont " " " H. M. Brown, C. A. BENNETT.
Licking, " " " .....G. W. GARRISON.
Morgan " " " .....D. RUSH, H. J. NOYES.
Central Ohio Medical Ass. .....E. C. BRUSH.

Also, that the following Societies be made auxiliary:

Union County Medical Society,.....I. M. SOUTHARD.
Geauga " " " .....J. A. DICKSON.

Report adopted.

The remaining papers were then read by title, and the Society adjourned, to meet in Cleveland, June 6, 1883.

STARLING LOVING,
President.

J. F. BALDWIN,
Secretary.

REPORT OF COMMITTEE ON PUBLICATION:

Committee met at office of the chairman, June 26, at 3 P. M.

The following bids were opened, being made on an estimate of 600 copies of 500 pages each; paper, 50 lb., Eastern Book, sized and extra calendered, 25x38; type, binding, etc., same as previous years:

Ohio State Journal Co.,	$540.00
Myers Bros.,	511.00
Cott & Co.,	473.00
Lord & Bowman,	453.00
Hann & Adair,	445.70
Columbus Printing Works,	440.00
GAZETTE PRINTING HOUSE	431.00

The bid of the GAZETTE Co. being the lowest, the chairman was instructed to enter into a contract with them.

The various papers presented were then considered, and all ordered published, subject to such curtailment as the chairman might see fit to make.

The chairman offered the following propositions, which were unanimously approved of and adopted:

1. The Committee will give each author fifty neatly bound re-prints of his article, free of charge.

2. It will furnish such engravings as may be necessary to illustrate any paper, provided the author will provide the drawings so executed as to be ready for the process of photo-engraving.

3. The author of any paper read before the Society, and approved by this Committee, may publish the same in any medical journal he selects, with the words, added—"Read before the Ohio State Medical Society," *provided*, he transmit to the chairman of this Committee, for publication in the *Transactions*, a copy of his paper within thirty days after adjournment.

Committee adjourned.

J. F. BALDWIN, *Chairman*

LIST OF AUXILIARY SOCIETIES,

WITH DATE OF ADMISSION.

Academy of Medicine of Cincinnati.....1875
Allen County Medical Society.....1867
Ashland County Medical Society.....1865
Ashtabula County Medical Society.....1878
Athens County Medical Society.....1866
Athens, Morgan and Washington Medical Ass'n.....1855
Bay City Medical Society.....1880
Belmont County Medical Society.....1851
Brown County Academy of Medicine.....1877
Brown County Medical Society.....1877
Butler County Medical Society.....1852
Central Ohio Medical Society.....1869
Champaign County Medical Society.....1853–1879
Cincinnati Medical Society.....1875
Clarke County Medical Society.....1849–1852–1877
Clermont Medical Association.....1854
Cleveland Academy of Medicine.....1870
Clinton County Medical Society.....1879
Columbus Academy of Medicine.....1879
Columbus Pathological Society.....1877
Cuyahoga County Medical Society.....1879
Darke County Medical Society.....1879
Defiance County Medical Society.....1881
Delamater Med. Ass'n of Norwalk and Vicinity,1859–1870
Delaware County Medical Society.....1869
Delaware Medical Society.....1854–1875
Delaware Medical Institute.....1872
Drake Medical Society.....1854
Erie County Medical Society.....1850–1877
Franklin County Medical Society.....1879
Fulton County Medical Society.....1870
Geauga County Medical Society.....1882
Greene County Medical Society.....1856
Guernsey County Medical Society.....1881
Hamilton County Medical Society.....1849–1852
Hardin County Medical Society.....1866
Highland County Medical Society.....1877
Hocking Valley Medical Society.....1879
Holmes County Medical Society.....1869
Jefferson County Medical Society.....1859
Knox County Medical Society.....1863
Lancaster Medical Institute.....1849

Lawrence County Medical Society.....1877
Licking County Medical Society.....1879
Lebanon Medical Society.....1849
Logan County Medical Society.....1875–1877
Madison County Medical Society.....1881
Mahoning County Medical Society.....1879
Marion County Medical Society.....1879
Medico-Chirurgical Society of N. E. Ohio.....1876
Medina County Medical Lyceum.....1858
Medical Ass. of Adams, Brown and Clermont Cos.....1850
Meigs County Medical Association.....1850
Miami County Medico-Chirurgical Society.....1851
Miami Valley Medical Society.....1879
Montgomery County Medical Society.....1851
Morrow County Medical Society.....1878
N. Central Ohio Medical Society.....1881
North-Eastern OhioMedical Association.....1870
North-Western Ohio Medical Association.....1869
Pickaway County Medical Society.....1856–1878
Portage County Medical Society.....1869
Preble County Medical Society.....1849
Putnam Medical Society.....1877
Richland County Medical and Surgical Society.....1850
Ross County Medical Society.....1876
Sandusky County Medical Society.....1880
Scioto County Medical Society.....1868
Seneca County Medical Society.....1854–1879
Shelby County Medical Society.....1852
Stark County Medical Society.....1850–1852
Stillwater Medical Society.....1873
Summit County Medical Society.....1866
Toledo Medical Association.....1857
Trumbull County Medical Society.....1868
Tuscarawas County Medical Society.....1851
Union County Medical Society.....1882
Union Medical Association.....1879
Union Medical Society of Alliance.....1864
Wayne County Medical Association.....1850
Wood County Medical Society.....1877
Zanesville Academy of Medicine.....1879

OHIO STATE MEDICAL SOCIETY.

At the Seventeenth Annual Session of the Ohio State Medical Society the following resolution was adopted:

Resolved, That the publication of any address, prize essay, or other paper by this society, is no evidence of its endorsement of the sentiments therein contained.

PRESIDENT'S ADDRESS.

BY

STARLING LOVING, M. D.,

COLUMBUS OHIO.

Fellows:

There are few, if any subjects ordinarily embraced in a formal address on occasions like this, which have not already been presented and discussed with more learning and ability than belong to me. But it may not be amiss for me to bring forward a few points in order to refresh your memories.

I found so much difficulty in the search for comparatively new ground that for a time I abandoned the idea of attempting the ordinary address and prepared a paper on a purely medical theme to read instead. But intimations from several sources led me to suspect that such a departure might be received with doubtful favor. I therefore abandoned the idea and have gotten together some suggestions concerning familiar topics which I beg leave to offer for your consideration. There are not many of these, however, and I shall present them as briefly as possible.

The state of this society claims first attention. We are prosperous, numerically, but our membership does not increase so rapidly as would seem natural with the increase in the number of the profession, and many seem to forget when they have been elected that anything more than the payment of the annual assessment is expected. Hence, when one receives the printed report of the proceedings, he finds its marasmic and attenuated appearance suggestive of dissolution. I am informed by

the secretary that many never attend a second meeting, and forfeit their membership through non-payment of dues.

This would seem to indicate want of interest in professional matters, and a lack of pride in the society, but I think it arises from other causes: First, from the plan which has been followed from the foundation of the society to the present time, of changing the place of assembly every year—holding it this year in Columbus, and next in Cincinnati or Put-In-Bay—making it difficult for many to reach distant points, and subjecting them to a greater expense than seems necessary. Second, from what has happened occasionally, the meetings have come to be regarded by many, especially those who value time and who are interested in science, as reunions, for the purpose of having a good time, for junketing, instead of the discussion of professional topics and the promotion of scientific ends. It is not worth while, say they, to go from Cincinnati to Cleveland, to hear three papers read and go boating on the lake; nor to come to Columbus and visit the asylums and the penitentiary. Third, we have fallen into the habit of depending on a few men who write with facility, and speak with ease, for almost all essays and reports. Much is expected, and, now and then, given, but the effect is to prevent modest or diffident, and young members from attempting anything, from apprehension that their efforts may not quite equal in style those of distinguished writers or teachers.

Again, the mode followed until the last year, of publishing all essays in a volume of proceedings, distributed, with the exception of a few copies, to members only, to be placed upon the shelf, or on top of the book-case, and forgotten as soon as possible, has deterred many from presenting important papers, and no one can be censured for not wishing to see his work buried in this way.

Moreover, the State, in not enforcing the law, has neglected to give any sort of protection even to those who are the Alumni of her own chartered institutions. She has, in fact, completely ignored our existence as a profession, and established free trade in medicine, and to-day acknowledges the pretender who assumes our guise as the equal of the most distinguished physician within her borders, and has thus, in a measure, destroyed professional pride.

The remedies are simple. I think there should be a permanent place for the convention, say Columbus,

which is central, easily and quickly reached from all parts of the State. Should such plan be adopted, no great time would elapse before a building, suitable for meetings, could be erected or purchased, and a library and museum founded; and what a splendid collection of pathological specimens could be made within ten years, even by the donation of one or two annually, by each member!

The meetings should be devoted wholly to the consideration of scientific topics, or at least such should take precedence over any social entertainments, which are valuable from pleasant associations, but do not advance the cause of learning. Members should present their essays beforehand, and time should be allotted to each for reading. All should be impressed with the fact that it is not dissertations on unsettled and obscure subjects alone which make the meeting of the society interesting and profitable. Every member can contribute something which will interest all, and each should feel it incumbent upon him, for his own, and the general good, to make a contribution, at least once in four years. Carefully written and truthful reports of cases form not the least valuable parts of the archives of medical societies. It is upon such reports—the recorded experience of the many—that our knowledge of practical medicine and surgery is founded. Not reports of rare and perplexing cases alone, for such are not always valuable except for reference, but records of common, every-day observations of ordinary diseases. Henning wrote his paper on dysentery from the observations of thirty cases, but Leibermeister got the records of eleven thousand before publishing his imperishable description of Typhoid Fever. Dr. West did not feel prepared to begin his work on the "Diseases of Children" until he had obtained the histories of fifty thousand cases. There are gentlemen now present whose observations of disease, and the knowledge acquired thereby, if published, even in the simplest form, would comprise a volume which would make their names immortal as that of Sydenham or Drake, but who have written little, thus denying to the world a heritage, the value of which cannot easily be estimated. Young members should bear in mind that for them, "now is the accepted time," and that like other habits, the practice of recording what they see and do is easily acquired. While they have leisure let them diligently improve opportunities, and present the results of their labor for discussion.

The present plan of publishing the proceedings of the society, which I think much the best, prevents the neglect of which there has been such general complaint.

With united effort, the profession has the power to influence legislation as far as may be necessary to protect their interests. Really, we are to blame for the present attitude of the State government toward us. We have been supine and neglectful where we should have been active and aggressive. No meeting should pass without full and free discussion as to the needs of the profession—of what is necessary "for the good of our order." Our attitude should be one of constant vigilance and readiness to take the aggressive, and whatever dissensions we may have among ourselves, we should present to the world an unbroken and well dressed front. The committee on admissions, with the power to exercise the closest scrutiny with regard to the eligibility of candidates, should, I think, be also empowered to exact a promise from each, as a condition to membership, to contribute at least one paper, to be read at a regular meeting within three years after his election.

The recent action of the State Medical Society of New York, and the more recent action of the National Medical Association, have brought into prominence a subject which is never approached except with hesitation and even repugnance. The code of ethics, by which this in common with all the medical societies of the country is governed, is seldom appealed to except to gratify personal animosity, nor is it, it is to be feared, always rigidly observed except by weak and young practitioners. By some, who feel assured of the support of the laity, and by unscrupulous members of the profession, it is frequently evaded and often openly violated. This refers especially to that clause of the code which prohibits consultations with irregular practitioners of medicine, those who hold to "exclusive dogmas." There are members of this society, even officers and those who have served as officers in former years, who habitually consort and consult with such practitioners, seemingly with as much freedom as with their brethren, thus gaining business and the commendation of a large class of so-called liberal-minded people, and calling forth the sneers of the same class at the bigotry of the "Old School," or rather at those of the regular profession who through conscientious scruples feel bound to obey the rules which, on becoming members, they placed themselves under obligation to obey.

If there be right, in any sense of the word, in such course, it should be open to all members alike; if wrong, as there undoubtedly is, so long as this clause of the code stands, those following it should be punished, for the rule is imperative, and its language so plain that it cannot be misunderstood. I would therefore recommend that the code be enforced by decided action; amended to suit such as may desire to place themselves on equality with irregulars, thus sparing them that disturbance of conscience which they must experience every time they violate it; or abolished entirely, so that every member may follow his own promptings, and choose his own associates. The code may be considered by some as oppressive, to have outlived its usefulness, to belong to a fossilized age, like many other old-fashioned rules of propriety and rectitude; but it exists as our guide in professional conduct, and cannot be disregarded; nor has any man, who knowingly and wilfully evades or violates its provisions, a right to retain his membership here.

The code was modified by the New York Society, so as to allow its members to consult, in emergencies, with "all lawful practitioners of medicine," including, of course homeopathists and all others holding diplomas from legally founded institutions. They based their actions on essentially the following reasons: 1. That many homeopathists are as thoroughly educated in medicine as their neighbors of the regular profession, and that in New York and elsewhere, but particularly in New York, they have openly discarded the infinitesimal jugglery of Hahnemann, and declared their belief in the ordinary doctrines of the action of medicines, adhering to the doctrine of similars only, and to that so far as it can be maintained by facts. 2. That many homeopathists are as honest and conscientious in their belief as men can be in regard to anything, are upright, and have social position equal to that of the regulars. 3. That the people at large can see no difference, since all bear the sacred name of physician, but look upon all alike as advisers in time of distress—as physicians—to be selected in general by the criteria of personal attributes, reputation for honesty, faithfulness and skill, without regard to peculiarities of practice or belief. 4. That the knowledge and skill of the physician are merchantable, his stock in trade—and that he has the same right to sell these as any other commodity—for as much as they will bring. (Thus it will it will be seen, that a part of the

profession, at least, in common with the irregulars, look upon practice as a trade, having the same status as other trades, and subject to the same laws.) 5. That it is not just for us to throw away advantages because of differences of doctrine between the regulars and the homeopathists which are not greater than exist among the regulars; that exclusion from fellowship in the profession which was intended and is still intended to destroy homeopathy, has failed in its object, and for that reason, if for no other, should be abandoned.

No one can deny that there is force in these arguments. There are others which may be adduced that are still stronger; exclusion from fellowship is now as heretofore, the main strength of the irregulars. So long as they can raise the cry of persecution for opinion's sake, they will have the sympathy of a very large class of the community who have social position, money, and busy tongues to give substantial aid to their sympathies.

A member of the New York State Society, the other day, in my hearing, declared it to be his belief that if the regular profession could be made to break down their opposition to homeopathy and meet the practitioners of that faith on something like equal terms, even the name would disappear in five years, and I believe that in this he is correct. We should rob them of their stock in trade and leave them to rely solely on what merit may be found in their mode of practice. Their schools, puny and ill-equipped as they are, would soon languish, for students would have no reason to seek—would not seek them, because of the superior advantages and excellence of the regular colleges. This is the most vulnerable point. Take away the schools created especially to foster fanaticism and exclusiveness and oblige the young men who frequent them to mingle with the larger number in the regular schools and they will soon discover their error.

One may conclude, in reflecting on this subject, that it may be right to withdraw barriers to fellowship completely and without delay. I am not sure but it might be best, still we should always pause before adopting a radical measure—before taking a step which cannot be retraced.

What has the regular profession to gain by abandoning the defenses which they have so long held against those who have retarded, as far as they could, the advance of true science, and maintained themselves meantime by appeals to credulity, superstition, and prejudice?

Not much, except a little money and the approval of a class who, were Hahnemannism out of the way, would, the next day, seek something new.

When we consent to associate professionally with these men we shall degrade ourselves from the high position we have always occupied to the level of a mere trade, for most of them use their name as a trade-mark only; and appreciate fully that it comprises their sole claim upon the public.

Clearly, although the lay mind will not perceive it, no man can believe in and practice homeopathy as taught by Hahnemann, who is not either a knave or a fool. To ask any one to believe in the potency of the higher triturations and dilutions, is worse than to ask him to accept as orthodox christianity the doctrines of Mormon, as philosophy, the theory that the "Sun do move," or as the true exposition of esthetics, the inanities of the humbug Oscar Wilde.

The homeopathists claim to have discarded all such nonsense, and to give, when necessary, medicines in ordinary doses for ordinary effects. We know perfectly well that they do the latter when they treat disease successfully with medicines, but they retain the name and continue to deal in infinitesimal pills, thus convicting themselves of false pretense and knavery, for homeopathy, if anything, is what Hahnemann taught. They are not acknowledged by our own or any other government. No homeopathist, as such, can obtain a professional appointment in either the Army or Navy; and in the courts, they are never sought as expert witnesses.

They have no literature, nor can they claim a single discovery in any department of science, not even in Therapeutics, that branch of study to which they would have us believe they devote most attention. Meanwhile the world has resounded with the triumphs of legitimate medicine in the cause of humanity.

Of course, if we modify our code so as to permit fraternization, however limited, with homeopathists, we shall be obliged to extend the same courtesy to eclectics, spiritualists, uroscopists *et id genus omne*, including Lydia Pinkham and the "retired clergyman whose sands of life have nearly run out," for, in the language of the surgeons, the line of demarkation is not very broad. The thought is not overly pleasant! It might be more so if what was done by the New York Society had been accepted as a concession and an expression of good will,

but it was not. The homeopathic journals claim it as a great victory for their side, and as evidence that the regular profession is trembling for existence.

Finally, if we go with the New York Society, or rather the minority of that Society who changed the code to suit themselves, we must consent to be dropped, like those gentlemen, from the fellowship of our grand old profession whose flag is on every hill, whose deeds have been told in all languages, and sung in poesy and prose from the Iliad of Homer to the St. Paul Journal of last week; whose hand is found in the works of literature, art and science, and whose strength to-day is greater than ever before. The thing is impossible. The American Medical Association, our Supreme Court, has unanimously declared against it. Gentlemen, you, this morning, when you adopted your new constitution embracing the code of ethics of that association, declared against it.

The evils arising from the extended and increasing use of non-officinal and proprietary medicines, deserve, I think, special notice. Such medicines, the so-called "elegant preparations," embracing almost every article used in prescriptions, made by secret processes, or at least not by the recognized methods of the pharmacopeia are rapidly taking the place of officinal preparations.

They are placed upon our tables in the shape of seductive samples, by equally seductive agents, each of whom will, if opportunity is allowed; occupy an entire afternoon in proving to the would-be polite, but bored practitioner, the superior excellence of his wares; and that he may not be forgotten, leaves, with his samples, circulars and advertisements, signed ostensibly by eminent practitioners, recommending his medicines to the profession at large in an especial manner as superior to any similar or other preparations, and expressing unbounded confidence in the integrity of the manufacturer and proprietor. The agent, to make sure his work, on his return home sends a flood of circulars, neat little dose books, postal cards, etc. Finding here and there a medical journal, he buys advertising space for copious notices of his house; semi-occasionally he announces some new discovery in chemistry or pharmacy, made by the head of his firm; a new remedy, such as the Extract of Saw Palmetto; or a wonderful result from the influence of one of his preparations, etc. Few, if any, of these much lauded preparations are those of the pharmacopeia. That book is kept carefully out of view. If we consent

to use any of the medicines, a gentle hint is given us to remember, please, to state in the prescription that we wish for those prepared by the Messieurs Blank in preference to any other, etc. Now and then we are tempted from the pleasant taste or the convenience of the shape in which an article is presented to write for it, or to request its use by a patient. And when we have fully committed ourselves, we discover that we have become the agents of a drug firm, and are assisting them in advertising their goods.

In accepting a lot of valuable specimens we place ourselves somewhat in the position of the legislator who accepts a pass from a railroad company—in effect we have been bribed, not to oppose if we do not openly advocate the interests of our house, and when we can do so without going too far, to directly forward them. I regret to say that many physicians do both, not only in private practice but in the public prints. Not unfrequently we find articles in the journals in which the writers claim to have peculiarly happy effects from a preparation better than from other preparations of the same drug as made by officinal formula, &c., and this without accurate knowledge of the manner in which the remedies have been prepared, and in fact, it is to be feared, often without knowing whether they are really what they are represented to be. That such practice tends to lower the profession in the estimation of the men who thus use it to forward their own interests cannot be denied; nor can they be blamed if we permit them thus to use us; if we give them control of what exclusively belongs to us; if we allow them to become masters when they should be servants.

The use of such medicines by the physician injures him also with the public—with his patients. In their minds he is supposed to be thoroughly acquainted with drugs and their effects, to know how they should be prepared for use, and when they are directed to purchase a proprietary medicine are apt to doubt the knowledge of the adviser, and to think that they can buy such and take them without the recommendation of the doctor.

If proprietary medicines are prescribed we are necessarily ignorant of several circumstances which are of the first importance in the use of remedies. We know nothing of the mode of preparation nor of what is to be expected from their action, at least we cannot judge as to probable effects with that degree of precision and cer-

tainty as when officinal preparations are used. Each manufacturer has his own formulæ and modes of reduction, and the articles must, of course, as made by different firms, vary in strength so that, even with the printed labels in our hands, we hesitate as to the proper dose. In fact, the quantity for the production of ordinary effects is conjectural and can be learned through experiment only, notwithstanding the assertions of the vendors to the contrary. I saw full dilatation of the pupil and extreme dryness of the throat from a single drop of a fluid extract of belladonna which had been prescribed in ordinary doses.

Leaving these considerations out of view, the practice is bad from the effect it must necessarily have on students, who fail to discover the necessity for them, to spend months and years in the study of chemistry and the *Materia Medica* when they see their preceptors using compounds ready-prepared by others—secret compounds. With such example how can we expect them to devote proper attention to those branches, the knowledge of which is indispensable to their success in practice, for without competent knowledge of the *Materia Medica*, the physician, though, perhaps, ornamental, is certainly not useful in the sick room. There is not a teacher who will not agree that students are more often deficient in this branch and chemistry, than in any others, and that extraordinary effort is necessary to maintain even a moderate degree of interest in them, and with each succeeding year increasing effort is required. Some of these medicines are no doubt good. Such should be adopted and placed at once in the *pharmacopeia.*

It is to be regretted that the Legislature failed last winter to establish, as was expected, a State Board of Health. A bill for that purpose, with proper provisions, passed the senate and was brought before the the lower house where strong effort was made to secure its passage, but the measure failed, mainly, as I am informed, through the influence of one or two members, assisted by interested lobbyists, who were displeased that homeopathy was not placed in the bill on equality with the regular medical profession, and this, with the non-recognition of eclecticism, was the cause of the failure of a similar bill presented some years since. Thus the State of Ohio, the third of the Nation, through the action of a few, who, in common with all citizens, should be interested in good government, is made to present the anom-

aly of being behind not only the weakest and poorest of her sister states, but also all enlightened countries, in a matter acknowledged everywhere to be of the first importance to the welfare of the people.

A State Board of Health, as has been well said, is a general sanitary police—a board of directors in general, of sanitary science.

It is the duty of the state to control sanitation as she does the person, commerce, navigation, &c.—to oblige men to live not only with propriety, but in health—to live in health themselves, thus securing health to their neighbors. All people are willing so to live if properly instructed, but sanitary science is as difficult as any other and is not learned without study more than grammar or algebra. It is more difficult than any elementary science, because like other medical study it embraces every branch of knowledge. However, it may, in a general way, be comprehended by all, and while it is the duty of the state to enforce sanitary regulations, it is equally her duty to instruct the people that they may know how to obey her commands and help to execute them.

Of late all the more progressive governments have undertaken not only to enforce necessary regulations, but also by various means to instruct the masses in the laws of hygiene; and the measure of their civilization and refinement is found in the measure of their success in this direction.

In proof I may cite the increased longevity and lessened mortality of Great Britain, and especially of the city of London, the most salubrious of all great cities, since application of sanitary science enforced by law simplified and explained by competent teachers. Nearer to us, and more pertinent as an example, New Orleans, formerly notorious for its insalubrity, is becoming under rigid state and municipal sanitary control, comparatively a healthy city. Even the great Premier D'Israeli thought it not beneath him to deliver before an open-air meeting of the common people, a lecture on the means for the preservation of health.

The difficulty of imparting such instruction increases with the growth of population and somewhat in proportion to the artificial helps brought to supply the wants of society.

We are emerging from the crude methods of pioneer life and beginning to assume those of older civilization,

but with immense advantages over many older nations; we are untrammeled, comparatively rich, and have the accumulated experience of the whole civilized world for our guidance. Yet with all this superiority, new and more complex dangers to health and life, from our condition, as well as through the increasing use of varied machinery, are met and are constantly assuming greater magnitude.

Many of the states, as Massachusetts, Michigan, and Illinois, appreciating the full value of the workings of a general supervisory body, have made available everything to be attained, and the results are sufficiently apparent in the improved condition of their people. As an example, the management of epidemic small-pox during the past two winters by the State Board of Health of Illinois, in comparison with the management of the same disease during the same time by the authorities of Cincinnati, as stated by its daily press, is sufficiently conclusive.

It is humiliating to reflect that we of the great State of Ohio, who boast of the excellence of our colleges and schools, who endeavor to impress the world with our refinement, who are proud of our great deeds and great men, who are ready to furnish at a moment's notice a president, a judge of court of last appeals, a minister to the Imperial Court of Vienna, generals for the army, and free advice for all, should be behind the government of Monaco in the care of our health in not having responsible officers whose duty it is to watch over and care for our sanitary condition.

Except in provision for the insane, the blind, the mutes, imbecile youth, paupers and criminals, no attempt has been made by the State for the protection and conservation of the public health. On the contrary, not only does she not protect, but through her public works has committed positive injury in the creation of dangers which did not before exist. Witness the influence of the canals and reservoirs. Even the edifice in which our law-makers meet in annual session is a pertinent illustration. That, building erected at a cost of more than two million dollars, is so poorly lighted, warmed, ventilated and drained, as to prove a constant offense to the senses from the diffusion of sewer emanations, to seriously impair the health of the members of the General Assembly every year, and to have destroyed the lives of several.

The various expedients, which, without satisfactory results, have been devised and applied from time to time to remedy these defects, afford the best evidence of the ignorance of even the legislature (who may be fairly supposed to represent the intelligence of the people who make choice of them), of what apparently should be a simple problem. Not only is the State House, from the defects of construction already mentioned, uncomfortable and dangerous to those, who from their offices are employed within its walls, but from further faults, it, is in common with other State institutions, a nuisance to the helpless citizens whom fate, fortune and confidence have located in its vicinity. From early autumn to late spring, great clouds of black smoke are poured forth from its unsightly chimneys, saddening the dark days of winter, and defiling the houses, furniture, and clothing of the people.

In caring for the classes of unfortunates mentioned, the State while expending hundreds of thousands of dollars annually, has failed to do her full duty, in that, except in the case of criminals and vicious youth, she has done nothing to promote their general health. With perhaps two or three exceptions, none of the state asylums are properly ventilated or thoroughly drained, and not one is fire-proof.

Enough has been lost through fire within twenty years to have employed the best architectural talent of the world; to have rendered every public building absolutely safe from danger of fire, and paid an efficient board of health for a half century, and yet no more progress has been made than had been attained at the foundation of the state government.

What is true of state institutions is true of public and municipal buildings and works generally throughout the entire State. Of thousands of public school houses, Governor Foster says: "There is but one properly ventilated." Very few are properly warmed and not one is secure from peril of fire. All are so badly lighted that myopia, astigmatism and other defects of vision are yearly increasing at a rapid rate in spite of the fact that we have a clear atmosphere, and that no where in the state, unless in Cincinnati, is there any reason for the construction of buildings so that there may not be abundant light so distributed as in no way to injure the eyes. When the light by accident is sufficient, the text books, owing to the cupidity of publishers, are so poorly printed on infe-

rior paper as to cause diseases of the eye and predispose to affections of the nervous system.

The public schools so lavishly supported by the people are made, through courses of study framed to suit the convenience of teachers without regard to the aptitude, susceptibilities, or peculiarities of pupils, and through harrassing and unnecessary examinations and vicious regulations for deportment, the sources for many nervous diseases and disorders of nutrition which lead to consumption and other constitutional maladies.

Towns and villages are located hap-hazzard, without the slightest regard for health or convenience, to say nothing of beauty of surroundings—nay, often in defiance of all these. Money is expended in the erection of luxurious dwellings, which through ignorance are placed in the midst of deadly miasm, or so constructed that residence in them means sickness. The water supply in most of the towns and cities is either deficient or bad, or must necessarily soon become so, no provision beyond the temporary expedient of wells having been thought of—the streams meantime becoming choked or contaminated. Costly systems of sewerage are adopted in all the cities, but so constructed in many cases as to prove a bane instead of a blessing. Only last year it was proposed by the city council of Columbus to have a trunk sewer located so as to empty into the river just above the water works.

From the constantly increasing cost of living, and the many discoveries of modern chemistry, the adulteration of food has become an alarming evil. There is scarcely an article into which an adulteration can be forced that is not in some way vitiated. It is true that this occasionally is done with harmless substances, but such are adulterations and are not nutritious. Even the necessaries of life are so much adulterated that we are in danger of forgetting their true flavor and influence on the body. Flour, butter, milk, tea, coffee, vinegar, syrup, sugar, and other articles are found in the list—and yet more may be added. Pork is sold studded with trichina, while potted meats and fish poison whole families. Cloths and hosiery are colored with aniline which poisons the skin.

No wonder we of the profession find that diseases of the digestive organs and of the nutrition are of frequent occurrence, nor is it strange that we are obliged to treat so many diseases with stimulants; or that nervous disorders, including insanity, so rapidly increase.

There are laws for the punishment of such dishonesty, but, apparently, there are none whose business it is to see to their execution.

The wide-spread prevalence of small-pox during the past winter and spring, and even now, shows that the State has failed to provide adequate safe-guards against infectious and contagious diseases. Under existing circumstances, there is no protection other than local health-boards, composed for the most part of well meaning but uninformed men, dependent for office upon the whims and suffrages of the unthinking multitude, and selected often for qualities not calculated to render them conspicuous as conservators of the public health. The experience of the people of Cincinnati during the past eight months is a sufficient example.

Every year the railroads kill and maim scores of employes, the bone and sinew of the land, while the management apparently view the havoc with indifference, making no effort to improve the imperfect appliances, which in the majority of cases, are the source of destruction and distress. The number of maimed and helpless men thrown on the community every year is becoming a source of solicitude and apprehension. It is as if war existed.

Since other States have undertaken to regulate the practice of medicine within their jurisdiction, Ohio has become the refuge of hundreds of pretenders and sharpers, who, assuming our livery, are subsisting upon the confidence and credulity of the people, and injuring in the estimation of the public, the standing of the medical profession.

There should be some officer with power to enforce the statute against that crime, a vicious offshoot of the Woman's Rights movement, which threatens our existence as a people. Criminal abortion is becoming so general that in many quarters it is regarded almost as a matter of convenience and without remark.

The duty of collecting vital statistics, at present, is imposed by law upon the Secretary of State in connection with the gathering of statistics of every other kind. For this great work the General Assembly magnanimously gives him one clerk, who, in order to accomplish this undertaking, must be even better than a cyclopedia —an adept in every science.

How one mind can gather medical, educational, social,

agricultural, commercial and any number of other statistics, passes the comprehension of all except that of the Ohio Legislature.

Nevertheless, the present Secretary has been, as his last report shows, more successful in the labor imposed upon him than might have been anticipated, for he has collected valuable medical statistics which are systematically arranged, and are as correct as could be expected considering that they were gathered by assessors and probate judges.

The entire system is radically wrong. The gathering of vital statistics, the most valuable of all knowledge, should be entrusted to physicians fully conversant with the subject, and not to assessors or probate judges. Here is a field, the thorough cultivation of which in itself, would amply repay to the people of this State any expense incurred in establishing a Board of Health. Such a Board should not only supervise the collection of these statistics, but intrust their collection in the respective counties of the State to physicians fully conversant with the duties of their office.

The establishment of such a system of collecting vital statistics affords the only means of having the work properly done. Thus and thus only can accurate knowledge of the health and conditions of various localities be ascertained and proper safe-guards established against endemic and other morbific influences which may exist in them.

Surely these subjects are as worthy of attention as the Congressional districting of the State, the dog and the temperance laws. The public has a right to demand that the authorities give them heed, and that adequate measures be taken to protect the most precious of all possessions.

If we cannot have a Board of Health with the necessary power, in order that we may be on an equality with our brethern of the neighboring states, and the profession of the law, I would suggest to the society the propriety of making the attempt to have established by the State Board of Censors, whose duty it shall be to examine the qualifications of all practitioners of medicine, or at least those who shall hereafter propose to become practitioners—to stand between the people and the medical colleges, so as to prevent the latter, however good, and wherever located, from being the final judges of the competency and acquirements of the physician.

Such board should have, as have boards of health in other states, also the power to decide who shall be permitted to practice, and to prosecute all who evade examination, and who attempt to practice without the proper official authority. This, in effect, has already been done for the preservation of the standing of the bar, and even for that of the teachers in the common schools, and there is nor reason why it should not be done to preserve the standing of the medical profession, of vastly more importance to the community.

The young lawyer, whether he graduates at Harvard, Yale, Columbia or Cincinnati, must be examined by the supreme court or a commission before he can enter practice, and if possible to find such, a like high tribunal should be appointed to examine the physician, whether his diploma is from Edinburg, Paris, New York or Columbus.

In those states where such commissions have been established, Illinois, New York, West Virginia, &c., undoubted benefits have accrued in the improved standing of the profession, and in the expulsion or exclusion of hundreds of pretenders and sharpers, who, under the guise of a revered profession are ready to turn the credulity, weakness, and too often, the vices of the people to their own account.

The laws of Illinois, of West Virginia and Kentucky are comprehensive and just, placing every practitioner upon his own merits, without question as to the school of his graduation, provided it be a legally chartered one. The law of Pennsylvania partakes of narrowness in that it distinguishes in favor of the graduates of her own institutions, and that instead of a disinterested and independent board of examiners from the State at large, the faculties of two medical colleges are made the judges of the qualification of the graduates of all other medical colleges, thus, (if the gentlemen of those faculties choose to exercise the power invested in them), giving to the University of Pennsylvania, and the Jefferson Medical College control of the practice of medicine throughout the State.

A well conducted medical college could have nothing to fear from the existence and funtions of such a board of examiners, for it could not suffer. The graduates of all good schools would be only too proud to prove their qualifications by offering themselves for examination, and would present the official certificate as additional evidence of their fitness for practice.

The adoption of such plan may be objected to on the ground that the examining board appointed by the Governor, or the General Assembly may not prove an impartial body—that it may be composed of prejudiced and biased men, and it is possible that such objection may hold good, but we can trust largely to the discretion of the Executive, guided, as he would undoubtedly be, by suggestions from the profession.

Should objection be made by practitioners of the exclusive sort, and sustained, it will still remain for us to petition the State for a Board to be composed of regular physicians, in the ordinary sense of that term, to examine and pass upon those of their belief—the graduates of regular schools of medicine. Such a step would oblige others to do the same, and the result would necessarily be the establishment of a common censorship for all claiming to belong to the medical profession.

The effect of such censorship would be to fix plainly the status of the profession by law; to raise the standard of qualification to the level of, or higher than that required for the bar; and to settle definitely the question of medical education, preliminary and professional—a question not likely, it would seem from the past, to be settled by any other method.

While the standard of acquirement would be raised somewhat above the present level, the plan would not prevent the admission of incapable and unscrupulous men, but in this we have nothing to fear by comparison with the other professions. We have not a larger proportion of incapables, and with greater temptations and larger opportunities for evil practices, the physicians of Ohio are as honorable and upright as any body of men.

Failing the proposed plans, we have yet another resource for the preservation of the standard of our calling. Let the members of this society follow the example set by the Connecticut State Medical Society two years ago, and decline to receive as students, young men who have not had preliminary education, at least a common English education, if we do not go so far as the Connecticut Society and require also competent knowledge of Latin and Greek, which is highly important but not absolutely essential. It is true that the adoption of this recommendation would oblige many young men who, under present regulations would enter the medical profession, to seek other fields of usefulness, but it would at the same time save the same class prodigious and com-

paratively fruitless labor, and in many cases from disappointment, slights, and blighted hopes; for while some conquer disadvatages, and become educated and brilliant members of the profession, it cannot be denied that many, from the difficultles they necessarily encounter from the first hour, attain at middle life only the knowledge which should have been acquired with ease during pupilage, and never reach a higher position than bare mediocrity, while others fail altogether and eke out obscure existence, or, yielding to temptation, fall into evil practices, became vendors of patent nostrums, or politicians! It is therefore kindness to young men to insist that they shall be educated—shall have preliminary training before they enter upon the most complex and difficult of all scientific studies.

It is claimed by some that the social conditions out of the cities does not demand a high order of attainment in the profession—that the physician should not be better educated than his cliants; that the college-bred man will chafe and droop in remote neighborhoods, and is not appreciated. There was never a greater error. There is not a region in all this vast country in which the educated gentleman is not valued at his worth, and in which his influence in not proportioned to his attainments. The intelligence of the people is not found alone in populace centers; on the contrary, the keenest intuition is frequently found in the newest settlements, and it is in the country that the physician often finds his most appreciative friends.

The country physician has greater need for learning and training than his urban brother, for he is called to decide without hesitation and without resource, except his own store, the most momentous questions. When an artery is severed, a joint dislocated, a Cæsarian section, or version to be performed, there is generally not time to secure consultation—no specialist can reach the patient until too late.

REPORT

ON THE

PROGRESS OF MEDICINE.

By GEO. A. COLLAMORE, M. D.,

Toledo, O.

In surveying the field of practical medicine, it is apparent that, while sensible advances have been made in many if not all its divisions, a much greater progress has been attained in some than in others. This has been the history of medical advance from the origin of medical science. Original investigation and experiment, new applications of known facts, accidents even, have resulted in vastly enlarging the limits of our knowledge and bringing our science to that high plane which we occupy to-day, and which is, or should be, but the foundation of that superstructure which we are all engaged in constructing. The application of the microscope to the investigation of organic forms is the base of modern pathology; of the stethoscope to the examination of the thorax, the indispensable aid in pulmonary and cardiac affections; while Jenner's happy deduction has led to the mitigation and possible extermination of one of the world's scourges. These are simple illustrations. In their day, each filled the horizon of medical art. Each was controverted, tested, doubted and only by their proven truth and usefulness are we now able to reap the benefits flowing from them.

In like manner, one special branch of investigation is now demanding our attention to the exclusion of almost all others, and commends itself to our interest not only on account of the facts already made known and applied, but especially for the possibilities opened up for the

future. I need hardly say that in this I refer to the studies now being pursued into the nature and powers of certain so-called germs, and their relations to the origin, perpetuation and prevention of infectious diseases. As the subject is still under investigation, as a comparatively slight advance has as yet been made into these unknown regions of pathology, I will merely invite your attention to a brief statement of what is now established and the direction of future progress. Although volumes have been written, mainly by German and French investigators, as to the modes of investigation and the theories involved in the results, a resume of what has been actually accomplished will not require much space. [The best condensation which I have seen of the subject is embodied in an article by Dr. Alexander Duane, on "Charbon and the Theory of Preventive Inoculation," appearing in the *New York Medical Journal* for January. As I cannot improve the language of this article, much of the following will appear in the words of this author, duly credited. Dr. Duane says:]

"The morbid conditions which have been variously designated as charbon, anthrax, malignant pustule, and splenic fever, have of late received considerable attention; and this, * * because of the discovery of a method for their prevention, which not only promises to check the ravages of these deadly affections themselves, but also claims a wide range of applicability among other and more common diseases. It is, in short, on account of the apparent demonstration which it has afforded of the possibility of preventive inoculation in all zymotic diseases, that the study of charbon has assumed importance. For it will be readily understood that, if we can accomplish for measles, scarlatina, typhoid fever, and the various malarial disorders, what we have effected for small-pox, we shall have made a very great step in advance." Former attempts have failed from our ignorance of the method of modifying the virus so as to avoid its fatal effects. In the case of small-pox, nature herself has provided a modified virus. "Now, Pasteur and others believe that they have found a way by which the virus of charbon, chicken-cholera, and septicemia may be likewise so attenuated as to produce on inoculation only a mild form of these several affections," which, so far as can be shown, renders the subjects insusceptible to further attacks of these diseases. "The present theories of inoculation are intimately connected with the hypothesis

that different morbid processes are induced by the activity of specific forms of bacteria. It is these bacteria which constitute the special virus of a disease, that by which it is both developed in one individual and communicated to others; and the intensity of the virus, and hence of the disease itself, is in direct proportion to the vigor and rapidity of multiplication of these bacteria. Now, the whole secret of the modern theory of preventive inoculation is, by some means or other, so to weaken the vitality of these minute organisms that, when introduced into the system, they will either show themselves less energetic, or multiply less rapidly, and accordingly set up a mild grade of the disease, severe enough however, to insure immunity against a second attack."

Obviously, the first question is: Do these bacteria actually exist in the various zymotic diseases? That they do may be considered as proven with regard to quite a number of diseases, while others are still under investigation. Prof. Klebs, of London, gives a full account of what is known of the lower organisms and their associated diseases. He divides them into three classes: "the hyphomycetæ, the algæ, and the schizomycetæ." The first require abundance of oxygen, and hence induce few morbid processes. "They mostly exist upon the surface." "They include the vegetable parasites, achorion, trichophyton, aspergillus, and oidium of thrush. Of the algæ, the only important variety is the leptothrix. The schizomycetæ are the most important class. They comprehend two sub-divisions, the bacilli and the coccobacteria. The bacilli consist of threads, containing in their interior spores, which on becoming free can themselves develop into threads. Their whole development requires plenty of oxygen, and is carried on upon the surface of fluids. * * They all give rise to diseases springing 'from influences which are conveyed to the human body more or less directly from the soil.' Klebs gives the following list of species: *1. B. anthracis, 2. B. malariæ, 3. B. typhi abdominalis, 4. B. typhi exanthematici, 5. B. of hog-cholera, 6. B. leprosus;* and suggests that cholera and yellow fever may belong to the same group."

The coccobacteria are collections of micrococci in groups, united by a gelatinous substance (zooglea). They "are composed of two genera, the microsporina and the monadina." The first are present in various septic processes, and in diphtheria. The second are found in rheumatic affections, croupous pneumonia, erysipelas, mumps, the

acute exanthemata, as small-pox, scarlatina and measles, and the infective tumors, as tuberculosis, syphilis and glanders.

"We have given this classification of Klebs,' not because it is universally accepted, or even because it is regarded as in any way authoritative by those who believe in bacteria as the origin of disease, but because it serves to show how thoroughly men of science are imbued with a sense of the reality of this theory, when they ticket every disease with its appropriate micro-organism, and in fact, make the "organism" the index of the place which the "disease" should occupy in a nosological list."

Nothing in the history of science is more interesting than an account of the methods and devices by which the presence of these bacteria, in the several diseases, has been determined. The account is too long to be presented here, but it may be said in general, that where the bacillus itself could not be found in the blood of the patient, a portion of this blood supposed to contain bacteria, or their spores, was subjected to a process of cultivation in a suitable fluid, by means of which the spores or germs developed into recognizable bodies. "In other words, having caught our beast of prey, while still in the infant state, we * * * feed and fatten him, * * * till he attains adult proportions." And this is what has been accomplished by the "culture-method" of Pasteur and others. And as the propagation of each bacterium requires a different soil, a varying amount of oxygen and heat, different chemical conditions, and different relations generally, all of which are to be found out by long and laborious experimentation, it will readily be conceded that the wonder is, not that so little has been accomplished, but so much.

The presence of these microscopical organisms in the circulating fluids of persons affected with these various diseases having been demonstrated, a second question arises, do these diseases actually depend upon, or arise from, the influence of these so-called germs? The reply is, so far as is shown in the cases of charbon and chicken-cholera, that blood taken from animals affected with these diseases, and injected into the cellular tissue of other animals will produce the same diseases, without fail; while if the bacteria and spores are carefully strained out, this effect fails to appear. "The experiments of Davaine, of Koch, Pasteur and Toussaint, prove conclus-

ively that the inoculation of this disease, (charbon) in order to be successful, requires the presence of the bacilli in the inoculating material." And this is true, not only of the bacterial blood of the animal, but also of the culture fluids obtained from it. "Indeed, there is, perhaps, no more striking fact in the whole range of pathology, than the persistence with which the bacteria retain their virulent properties, and the extreme degree of dilution which they can bear without any apparent decrease in activity." In anthrax, therefore, it may be considered as settled, that the bacteria are the cause of the disease. As to whether this fact holds good for the other diseases in which bacteria have been found, remains to be shown.

As to the manner in which these disease-germs act, when introduced into the system, in inducing the specific disease, we have nothing but theory. They act like a ferment, which, however, is no explanation.

Recognizing the presence of these bacilli in the fluids of a living animal, a most important question arises: Does medical science possess any means of attacking and destroying them, with safety to the affected individual? Can we introduce any substance into the blood which shall kill or antagonize these parasites without injury to the blood or person? We are compelled to answer this question in the negative. Nothing has yet been found to accomplish this purpose. Here is a wide field for research, which will be cultivated in due time. What, however, throws a doubt on our readily discovering an intra-vascular parasiticide is the wonderful tenacity of life possessed by these low organisms. No ordinary degree of cold destroys them, and some of them bear a heat much greater than that of boiling water, without affecting their infectious properties.

But if we cannot cure the disease, we can do, at least in some few of them, what is perhaps better, and that is, prevent it. And this brings us to the subject of preventive inoculation. "Those experimenters who employed this (culture-) method, and saw how, by its aid, they could cause the development and propagation of the bacteria, were naturally led to the belief that by a modification of the process they could produce corresponding alterations in the growth and activity of these organisms. They could, it was thought, impose such conditions upon the growing and multiplying bacteria, that their development would be arrested, and their

energy much impaired. To use a phrase which has become common with these writers, they might attenuate the virulence of these bodies. Now, inoculation with an attenuated virus would still produce the disease, as long as any activity yet remained in the bacteria injected; but the character of the affection would, they argued, be much less severe than usual. But it is well known that in charbon, and in nearly all the inoculable diseases, a single attack produces a complete or partial immunity against a recurrence. The inoculation of an attenuated virus ought, therefore, in all these affections, to produce the same beneficial result that vaccination accomplishes in the case of small-pox. Accordingly, the one requisite for bringing about this very desirable end, would be the discovery of some means by which the virulence of the bacteria contained in the culture-fluids should be very much diminished, without being entirely abrogated." In the case of chicken-cholera, Pasteur accomplished this by "prolonging the intervals between the acts of transplantation until the culture-fluid was nearly exhausted of nutritive constituents." "With each successive dilution, the virulence diminished, until a point was reached at which inoculation was no longer fatal. But inoculation still furnished immunity." In the case of the bacillus of anthrax, this plan failed, as the spores failed to be mitigated by attenuation.

Toussaint, however, overcame this difficulty by warming the culture liquid to within one or two degrees of the point at which the bacillus ceases to live. (113° F.)

Already these facts are being turned to account in the inoculation of animals for these disorders.

But it is in the possible application of these methods to the prophylaxis of the zymotic diseases affecting mankind that their importance becomes paramount. The present state of our knowledge may be summed up as follows:

"One disease, small-pox, is undoubtedly preventable by this means; three others, charbon, chicken-cholera and septicemia are probably preventable; and possibly, though of this there is grave doubt, hydrophobia. The number of diseases, which, theoretically, should be amenable to this form of prophylactic treatment, is a large one; for it should include all affections of which one attack procures immunity against another. It is possible that future researches will lead to the realization of this prospect, and will enable us to check the ravages of all the zymotic

diseases, as we have already learned to control the spread of small-pox."

"In conclusion, * * * the acceptance of the theory of preventive inoculation for any particular disease requires the demonstration of the following postulates:

1. The disease in question is characterized by the constant presence of a definite species of bacteria, or of their spores.

2. These bacteria, if not directly demonstrable in the blood of the patient, can be shown to exist by their subsequent development in suitable culture fluids, to which a portion of the blood has been added.

3. These bacteria are the direct agents in the development and transmission of the disease.

4. An attack of the disease produced by inoculation with these bacteria produces complete or partial immunity against a second attack.

5. The virulent power of the bacteria may be so weakened by suitable treatment of the culture fluids in which they are prepared that their inoculation produces only a mild form of the disease, which is still efficacious in preventing a recurrence."

From the researches now being prosecuted into this most important and interesting province, we may expect highly valuable results.

Of the diseases supposed to be produced by a microscopic organism, two have recently been reported upon—viz: malarial fever and tuberculosis. Klebs and Crudeli claimed the presence of the *bacillus malariæ* as the infective agent. In a recent report to the National Board of Health, Dr. Geo. M. Sternberg, having made various experiments with a view to confirm or overturn this hypothesis, comes to the conclusion that the fact, though not of itself impossible, is not yet proven. Rabbits were used as subjects. It would seem impossible to establish the infective nature of these bacilli until they had been introduced into the human circulation.

A few words must be said on the latest reported discovery of a parasite claimed to be the etiological factor in tuberculosis—the *bacillus tuberculosis* of Koch. This experimenter claims to have found these organisms in all tuberculous tissues; it is, in his opinion, the organized virus of tuberculosis. He has cultivated the bacillus and injected later generations into healthy animals, almost always producing a true tuberculosis.

These claims have naturally provoked much criticism,

and will be canvassed with the scepticism of science. At present the subject may be considered *sub judice.*

A word may be said as to the treatment of pyrexia. The dicta of Liebermeister that "by far the greater number of those who succumb to typhoid fever die from the effect, directly or indirectly, of the fever-heat," and "if we could guard our patients against the deleterious influences of excessive animal heat, typhoid fever would no more belong among the specially dangerous diseases," have not yet become convictions in the minds of medical men. As a conclusion to these premises, the vigorous hydro-therapy advocated by him and other enthusiasts has failed to commend itself to the average physician. In fact, progress in antipyrexia has recently tended to retrograde, and the old theory that the fever is a necessary and possibly useful element of the disease begins again to be hinted at. The unreliability of statistics is proverbial. With relation to typhoid fever, as well as scarlatina, diphtheria, etc., this may be said in general. There is a certain proportion of the cases, varying with the severity of the epidemic, which will certainly end fatally, in spite of the most appropriate treatment. There is also a certain other proportion which will as certainly end in recovery, unless prevented by inappropriate treatment.

Between these two classes lies a third class, and usually comprising but a small proportion of the whole, which presents a field for rational therapeutics. Comparisons as to efficacy of therapeutic appliances should be confined to this third class. As, in actual practice, this may be regarded as impossible, results based on the whole number of cases have an element of vagueness which is fatal to their usefulness. For this and other reasons the cold water treatment, first systematized by Currie nearly a century ago, has never secured a firm foothold in this country and is now, in my judgment, again on the ebb elsewhere.

Of the zymotic diseases scarlet fever and diphtheria are the two which present the highest rate of mortality and which prevail most generally throughout the United States. The proper management of these diseases is, therefore, a subject of the highest interest. As regards scarlet fever I am unable to record any material progress.

Pilocarpine is still under trial and has not yet become

an established remedy. Benzoic acid is suggested for the elimination of albumen.

In diphtheria the most important question, important especially in reference to the treatment to be adopted. is the question of etiology. The latest researches in this country are those by Drs. Wood and Formad, who have embodied their results in a recent report to the National Board of Health. These gentlemen quote nine observers as supporters and nine others as opposers of the bacterial origin of diphtheria. They take the ground that croup and diphtheria are identical, pathologically. To recapitulate the whole report, would require too much space. A few points only can be mentioned.

The micrococci of diphtheria are always found in diphtheritic membrane, and in malignant cases, in the blood. They are identical, to all appearance, with those found in the scrapings of furred tongue, as well as in other places, but may be distinguished from the latter by greater vitality under cultivation. The infectious principle of diphtheria is solid and separable, not aerial or fluid. Diphtheritic urine, filtered, leaves the paper full of micrococci, and the dried paper is even more poisonous than the membrane itself. Drs. Wood and Formad believe that this proves the micrococci are either themselves the poison, or carry it, or by their growth develop it. A very striking resemblance is found between the bacillus of diphtheria and that of hospital gangrene and anthrax, which fact leads to a probability that diphtheria and various septic diseases are only different manifestations of the same affection.

Such are the results of the most recent investigations. They leave the question of the bacterial origin of diphtheria probable, but not proven.

In consonance, therefore, with the view which dominates him as to its origin, will each physician be guided in its therapeutic management. If he views the disease as a septic poisoning, he will naturally resort to antiseptics, both locally and internally.

Carbolic, salicylic and boracic acids are the disinfectants most preferred. If he disbelieves this theory, he will as naturally, in view of the asthenic tendency of the disease, employ a roborant treatment, of which quinine, iron and alcohol form the chief ingredients. If there is one drug more employed than another by both classes of physicians it is the chlorate of potassium. Pilocarpine has proved a failure as a specific remedy.

I shall conclude this report by a brief statement of the present standing of the use of the salicyl compounds in acute rheumatism. The subject has recently been under discussion by the London Medical Society and the result may be thus stated, in the words of Dr. Broadbent, its President. "I think we may say definitely that by means of salicylate compounds the duration of the pain and fever in rheumatism is unmistakably lessened, and, even if the stay in hospital is not materially shortened, certainly the suffering is very much diminished. With regard to relapses, perhaps we may say that they seem to be more common under the new than under the old methods of treatment, still I am quite sure that the explanation of this is to be found in the rapidity with which all the acute symptoms subside under the administration of salicylates. * * I believe that when salicylates are brought to bear upon the fever in the first days of its existence, we shall see a notable diminution in heart disease, for in my own experience, during the whole administration of salicylates, it has been exceedingly rare to see heart disease springing up." The statistics, however, previously submitted to the Society had shown certainly no diminution; if anything, an increase of heart affections under salicyl treatment. The physiological action of the salicyl compounds is not discussed, but it is conceded that their use is attended by or results in great anemia. The prompt relief of pain and the shortening of the pyrexial stage will, however, continue these remedies in use, until a better substitute is found.

THE PAST AND PRESENT

OF

THERAPEUTICS.

AN INQUIRY INTO THE PROGRESS MADE BY THIS DEPARTMENT OF MEDICINE.

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What progress have we made in Therapeutics? is the question which I will consider during the few minutes allotted to my report. In order to answer this question intelligently, we must compare the present status of Therapeutics with that of the past.

Before the time of Hippocrates the methods used for the treatment of disease indicated gross ignorance and dark superstition. The practice of medicine was a mystery, and whatever was known concerning it was locked up in the brains of the individuals practicing it, and by them transmitted to their children with the strictest injunctions as to secrecy. Hippocrates—B. C. 360,—effected a great revolution in medicine. He freed it from much of the superstitions and false theories which incased it, and brought it into the channel of rational experience. He taught that the first duty of physicians

was to observe attentively the progress of Nature, and claimed that observation was the only true basis of medicine. In one of his books he made the announcement that "*Nature was the first of Physicians,*" and two thousand years of experience on the part of our profession confirms the truth and wisdom of that immortal utterance. The powerful impulse given to medicine by him extended through all subsequent ages. Nevertheless we find five hundred years after him, and during the time of the great Galen, that the profession was a prey to the most pernicious dissensions, the partisans of the different schools being much more widely separated than those of our day, and much more bitter and uncompromising in their denunciations of each other. They agreed upon nothing but converting medicine into a tissue of frivolous subtleties and useless discussions. Galen dispelled this disorder and led medicine back to the safer road of patient thinking and accurate observation which distinguished Hippocrates. After Galen's time, medicine gradually sank until the dismemberment of the Roman Empire, when the invasion of the barbarians from the North completed the annihilation of medical instruction. Through the Dark Ages none but monks practiced it, and to so low a level did it descend in the 12th and 13th centuries, that those who practiced it were held in low esteem. This led the church to expressly forbid the members of the clergy to practice it, and declared those excommunicated who would not comply with the order. Stringent as were these measures they were found inadequate to effect the purpose intended, and it was only at length accomplished by a special Bull procured from the Pope, which, by permitting physicians to marry, effectually divorced Medicine from Theology. The priestly doctors mingled their religious dogmas with a modicum of medicine and a great deal of superstition, alchemy and astrology. They usurped the place of the Zodiacal constellations in their government of the parts of the man's body, so that for every limb they had a saint. So generous were they in the distribution of their holy personages that not only did every joint of the body, but every disease that flesh is liable to, have a presiding saint. We find that St. Apollonia had charge of tooth-ache, St. Lenow of gout, St. Main of the itch, St. Erasmus of colic, St. Juliana of the headache, St. Clara of sore eyes, St. Blaise of bones sticking in the throat, &c. Nothing could more retard the progress of medicine and paralyze

all efforts for its advancement than this strange admixture. A widespread belief also existed in Astrology, the influences of the eclipses of the sun and moon, the appearance of comets, the aspects, conjunctions and oppositions of the planets in the production as well as the control and relief of disease. Certain positions of the celestial bodies were considered to be of malignant influence, by which contagious disorders were produced, whilst other positions indicated a benign and health giving influence. The conjunction of the great planets, as Mars and Saturn, caused the emission of deadly exhalations whereby myriads of animalcules were instantly generated and produced the plague, cholera, small-pox, or some other dire pest. It was firmly believed that medical substances bore upon their exeternal surfaces the properties or virtues they possessed, impressed upon them by planetary influence. The connection of the properties of substances with their color is an opinion of great antiquity; white was regarded as refrigerant, red as stimulant or heat-giving—hence cold and hot qualities were attributed to white and red articles. Red articles were given for disorders of the circulation, yellow ones for those of the biliary secretion, &c. We find in the treatment of small-pox, red bed coverings were employed with the view of bringing the pustules to the surface. The bed furniture and hangings were of a red color, red substances were to be looked at by the patient, and, as Avicenna contended that red bodies moved the blood, everything of a red color was employed in the form of medication, food and drink. John of Gaddesden, physician to Edward II, directed his patients to be wrapped up in scarlet dresses, and he says that when the son of the King of England lay sick of small-pox he took care that everything around the bed should be of red color; which suceeded so completely that the Prince was restored to perfect health. As late as 1765, the Emperor Francis I, was rolled up in scarlet cloth, by order of his physician, when attacked with small-pox, but unfortunately he died in spite of his red surroundings.

Amulets, charms and the royal touch were sovereign preventives and cures of disease. The heart of a lark attached to the right thigh gave immediate relief in colic; a piece of a sail of a wrecked vessel was an infalliable cure for epilepsy; the benzoar stone took away sadness, and made him merry that useth it; a woman in labor was quickly delivered were she girded with the

skin that a serpent cast off; a halter wherewith any one has been hanged, if tied about the head, will cure ague and many other diseases. A young woman walked fifteen miles, in England, in 1752, to procure a halter of an executed person. Moss growing on a human skull, if dried, powdered and taken as snuff, cured headache; a toad dried and powdered was a sure preservative against the plague. Pope Adrian is said to have never been without it. Serenus Samonicus had a classical remedy for quartan ague, viz: he directed that the 4th book of Homer's Iliad should be placed under the patient's head. The royal touch, as a remedial means for the cure of disease, was long believed in, and in England, for a period of over seven hundred years, its practice was more or less exercised.

The art of prescribing was very astonishing, down even to the present century. The most complex, absurd, costly and disgusting substances were mingled together in wonderful confusion, and taken with eagerness and avidity. In those days doctors were not paid by the number of their actual visits, or by the work done, but solely by the number of bottles and boxes of medicines that they could inflict upon their unfortunate patients. Andromachus administered a prescription composed of sixty ingredients, of which the essential was the dried flesh of vipers. Celsus gravely advised powdered foxes' dung sprinkled upon the drink in dyspnea.

The limited time allotted me will not admit of more than the baldest allusion to the superstition, ignorance and false theories which encased medicine for so many centuries. Although Mondinii De Luzzi, of Bologna, dissected the human subject in 1315, and afterwards composed a treatise on anatomy, the Egyptian darkness which had settled upon medicine was too impenetrable for this great event to illuminate it. Indeed, it was not until the 16th century that there were any marked indication of any improvement in medicine. Then it was manifested by a revival in the study of the works of Hippocrates. In France, Italy, Germany and England, eminent men vied with each other in making translations of his works and expounding his doctrines. In England, Thomas Linacre, physician to Henry VIII, published a translation in Latin, and devoted his fortune to founding at Oxford and Cambridge a chair of Hippocratic and Galenic medicine. The barrier, however, which had blocked the wheels of progress and made it

impossible for centuries for any advance beyond the doctrines and precepts of Hippocrates and Galen to be made, was removed the latter part of the 16th century, by Andreas Vesalius, who dared to dissect the human body, and gave the world the first anatomical plates executed after nature; and, although he drew down upon himself the anathemas of the church, and died during a pilgrimage which he was compelled to undertake to avoid persecution and expiate his great crime of having desecrated a human body, nevertheless, his act was one of the greatest and most important events in the history of medicine. Without a knowledge of anatomy, progress in medicine was impossible. Vesalius opened the way for the great discovery of Harvey—the circulation of the blood—in the early part of the 17th century (1619). This important discovery was for a long time contested with the greatest acrimony, and although Harvey was not compelled to expiate the crime of having desecrated the human body, as Vesalius did, nevertheless, he was so rigorously opposed by his own profession, that the historian, Hume, has recorded the fact, that no physician in Europe, who had reached forty years of age, ever to the end of his life adopted the doctrine of the circulation of the blood. It was not until the middle of the 17th century that this doctrine came to be generally accepted.

Anatomy and physiology now made rapid strides, and surgery, which had been in the hands of barbers until the latter part of this century, was elevated to its true position. Vesalius and Harvey prepared the way for Sydenham, the English Hippocrates, and Boerhaave, "who first gave chemistry a philosophical and systematic form, and reduced medicine to a science."

The 18th century opened with signs of activity and progress in all departments of medicine, particularly in anatomy, physiology, pathology and chemistry. I need only mention a few of the distinguished names which figured in this century, to remind you of the immense activity and rapid progress made in every branch, viz: Stahl, Hoffman, Boerhaave, Haller, Cullen, Darwin (Erasmus), Jenner, Bichat, Morgagni, William and John Hunter, and others.

Therapeutics is so intimately connected with every stage of medical progress, that it could not advance except as physiology and chemistry opened up the way for it. Hence, before the practice of medicine was based upon a thorough knowledge of anatomy, physiology, and

chemistry, progress in therapeutics was impossible. "Many of the so-called triumphs of medical treatment in the past, we now know were mere coincidences. The morbid processes being self-limited, came to an end, and medication, not nature, received the credit. Probably in no department of medicine have we met with so much crude observation and hasty generalization as in therapeutics. Heretofore all of the methods of medicine were necessarily empirical—blind gropings in the dark, with shrewd guesses for its conclusions. Experience was the only guide, but experience not founded in correct doctrines has been a blind leader of the blind." A few giant intellects during the earlier centuries seemed to have had intuitions of the great truths of medicine, and flashed the brilliant gleams of their master minds through the arid waste and dense ignorance of nearly twenty centuries. No substantial progress, however, was made until the 18th century. Even after anatomy, physiology, and pathology had opened up a royal road for progress, it was difficult for medicine to cast off the traditions, superstitions, and barnacles which encased it, and enter upon it. We may laugh at the credulity of the middle ages, when the way to cure a sword wound was to apply a salve to the sword, but the celebrated Hoffman, in the light of the 18th century, attributed nervous diseases to diabolical agency, and it is but little more than half a century ago that Windischmann, a professor in Bonn, claimed that a physician ignorant of exorcism lacked one of the most powerful agents of his art.

But what progress have we made since the 18th century? Some of our modern writers, and men of weight and standing in the profession, seem to think that we have not made much, if any. A few years ago Dr. Mathew Duncan told the students of the Edinburgh Schools of Medicine, that it was futile to hope for an era in medicine, other than that of Hippocrates and of the 15th century. Dr. Wm. Hamilton put it more tersely when he asked, "Has medicine made a single step since Hippocrates?"

Two thousand years after Hippocrates announced the immortal truth, that "Nature is the first of physicians," Dr. Allison, the successor of Cullen in the University of Edinburgh give utterance to this formal statement: "With the exception of a few drugs, three, four, or five out of many hundreds that have a place in the Pharmacopeia, which cure, we know not how, and which we

therefore call specifics, all drugs, our remedial appliances of every kind, in diseases that admit of cure, are auxiliary only to provisions of nature for the spontaneous cure of diseases, or the spontaneous decline of diseases."

Prof. Harvey, of the University of Aberdeen, repeats the same thought in his recent work, entitled "First Lines of Therapeutics," when he says the "first great law of therapeutics is, *the organism is its own healer.* Health is the normal condition of the organism, and that towards which its energies are ever directed. Thus, diseases are not only in their own nature transient states which come to an end of their own accord, but they have the positive forces of the organism habitually arrayed against them." Nevertheless, medicine has advanced and therapeutics has made progress. To discover the errors of the past, to have the courage to brand them as false doctrines and to cast them out as rubbish, is real progress. We have done that, and more, we are getting a sure and scientific grasp of our calling. "Medicine now rests on pathology and pharmacology, which, in their turn, depend upon physiology, while physiology depends on chemistry and physics. Until chemistry and physics had made a certain amount of progress, physiology was obliged to stand still and therapeutics could not advance." (Brunton.) Most of these branches have been systematically investigated. "Anatomy, physiology, physical diagnosis, and pathology, however, in their turn almost monopolized the study of those who gave direction to medical thought. But the branch which includes in itself the object and aim of all the others has been allowed to lag far behind. More has been known about everything else in medicine than the cure of disease. It is only within a comparatively recent period that any systematic effort has been made to do for therapeutics what so many and such zealous workers have been doing for the other departments of medicine." [Ed. *Med. Record.*]

Important results have been obtained in determining the effect of particular drugs upon particular organs, and the important investigations which have been and are now being made by such distinguished scholars and painstaking investigators as Fraser, J. Hughes Bennett, Anstie, Fothergill, Wood, Bartholow and others, into the physiological action of drugs upon the human economy, are giving a precision and accuracy in the use of remedies which could not otherwise have been attained. Our knowledge of the physiological action of drugs is, as yet,

quite limited, but the attention of the profession, the world over, is directed towards it, with the firm belief that when its mysteries are fully unfolded, it will furnish a rational basis upon which the therapeutics of the future will find a solid and sure foundation.

The activity which has characterized the progress of therapeutics during the past few years, and the widespread interest manifested in its study, gives assurance that the more important contributions to medicine in the near future will come from this department.

With the recent important discoveries in the etiology of diseases and the physiological action of medicines, and others that may soon follow, it is possible that even the present generation of physicians may be called upon to make a radical change in the treatment of disease in consequence of the empyrical methods upon which our present system of therapeutics is based, being supplanted by those which have their foundations in the solid rock of science.

Brunton recently said, "So great has been the advance in the study of the physiological action of drugs, and so rapidly does this advance continue, that it is hard, even for one who has been well trained in the subject, to keep pace with it, and it is difficult for those who have studied medicine a good many years ago to understand the methods employed in it, and its practical bearings."

LARYNGOLOGY,

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In venturing to come before you to-day for the purpose of presenting the claims of one of those branches of our science to which the name of specialties is now ordinarily applied, I do so with the gratifying confidence that many of the audience will be won to the position, which it is the object of this paper to maintain, even before any argument is entered upon, and that the growing experience of all practitioners will sanction the necessity for a more extensive and thorough study of the diseases of the throat and larynx.

It is customary to include in the domain of the specialist in this branch, diseases of the nose and esophagus as well, the custom being founded on the frequently observed influence which diseases of the one region are apt to exert on the other, owing to the close anatomical relations existing between them, and the extension of morbid processes by mere contiguity of tissue is a phenomenon of no uncommon occurrence. In confining ourselves, however, to that tract to the study of whose diseased processes we may justly apply the term of laryngology, we shall find that in this domain, alone, an amount of material has accumulated too great to be more than touched upon in the limits of one short essay. The labors of many patient, conscientious and able observers have served to establish the position of laryngology on as firm a basis as that of any of the recognized specialties of the day, and we may obtain a slight idea of the ever-increasing importance of this department from the establishment of new journals, devoted to this subject alone; from the rapidly increasing number of valuable discoveries, and from the improvement in the efficacy of therapeutical measures, which is, after all, the *ultima*

thule of all medicine, and the only criterion by which we are justified in estimating its merits or demerits.

Much has been written on the advisability of dividing the science of medicine into so many separate fields of labor, and many are the arguments advanced to prove that such division is apt to make the physician one-sided in his opinions, to narrow his view of the importance of general information, and to prove prejudicial to the patient by leading the medical adviser to overlook indications, which, though they be furnished by the general condition of the patient, yet have an important bearing on the success of treatment. To those who hold this view, the answer may be given, that the rapid increase of specialists and of specialties has not arisen from any arbitary action on the part of medical men, but that it has found its source in the necessities of the community; the great advances made in the healing art rendering it impossible for any one man, however great his industry and untiring his perseverance, to remain thoroughly informed of what is being done in all of those sub-divisions that have grown up from the vastness of the material to be handled. It is, to borrow a familiar example, a process exactly identical with the evolution of trades in social communities, a process that has been repeating itself the world over wherever any progress has been made towards enlightenment and civilization; the conditions being of such a nature that in the earliest, or barbarian period, where man leads a life of uncertainty, entirely dependent on the bounties of nature and seeking his food with the simplest instruments, the difficulties he has to encounter are so great, that each individual finds it necessary to employ all his energies for his own subsistence. Soon, however, a tendency to congregation developes, because of the greater security offered by united action; and, once this tendency established, a very short time elapses before it is found that individual members of the community possess greater aptitude for special work, to whom, then, the performance of such work is, in large measure confided. The increased demand for his labor will lead the workman to exercise his ingenuity for the greater perfection of the same; one improvement will lead on to the discovery of another, until finally, a separate art will be found to have grown up for the execution of those offices, which, in a less cultivated state, each man was wont to perform for himself. The evolution of specialties has followed a

similar course, the development of a specialty being only dependent on the primary methods of investigation and the discovery of these methods again being intimately related to the advancing knowledge in kindred sciences.

The existence of specialties was a logical sequence of an accumulated store of knowledge, and, while it cannot be denied that their exercise is liable to much abuse, and may, in the hands of the unworthy, prove a stepping-stone to deceitful and fraudulent practices, the same remark might be applied with equal justice to any of the mechanical arts. We must, in all our dealings, place a certain amount of confidence in the honesty of human nature until experience shall have taught the contrary; and we have no more means of judging of the skill of a watchmaker, to whom an instrument is brought for repairs, than of the particular fitness of a man who represents himself as specially qualified to treat a certain class of cases. It is presumed in both instances, that the necessary amount of study and of careful training has preceded the assumption of any responsibility, and it is to be remarked to the credit of the race, that, in the majority of instances, the presumption is well founded. Of the way in which specialties grow after once having taken root, no better idea could be obtained than the following extract, taken from the writings of one of the most eminent of English authors of the present day, Mr. Jonathan Hutchinson: "In the early stage of any department of knowledge, it is almost a matter of necessity that it should be in the hands of a few; but it is the highest privilege of those who thus devote themselves to the reclaiming of new spots of territory, to be able after a while to hand them over to the commonwealth, to prove that they are now cultivated and well worthy of annexation." The pioneers in laryngology have done their work ably and well, "the few" have acquitted themselves nobly of the trust, and every day is showing more and more clearly the extent to which they have carried the cultivation of their field.

As in other departments, so in this, it is a mistaken idea to imagine that the increase of specialists will detract from the usefulness of the general practitioner; he has more to gain than to lose by their existence, since the results of their labors, as published in the journals, are open to him on equal terms with all others, and he may thus learn to arrive at an accurate diagnosis and to

treat his patient understandingly and well. It is hardly possible that our knowledge should be increased on special subjects through any other channel than the labors of the specialists; their preliminary training and the greater facilities for observation presented to them rendering them, at the same time, most qualified to judge of departures from the normal standard.

All specialties might be fairly ranked as sub-divisions of surgery, referring to the word surgery its old and derivative meaning of "The healing of disease by manual operations;" for it has been found in the practice of all of them, that such operations are necessary for the relief of morbid conditions discovered by our new methods of investigation. If, now, a particular education be necessary for the acquisition of this technical skill in other specialties, it is especially the case in laryngology, where the nature, position and function of the parts involved all combine to make operative interference a measure requiring great delicacy in its preparation, and absolute precision in its execution.

Comparisons have often been made between the departments of ophthalmology and laryngology, comparisons that have their justification in the fact that both sciences have grown up from the discovery of an instrument which would expose to our vision the innermost recesses of the organ to be examined, and thus enable us to appreciate their condition in fullest detail; both organs are anatomically composed of independent structures, each of which is liable to diseases or perversion of function peculiar to itself, though this disease may occasionally affect adjacent parts either directly or indirectly; both organs play a prominent part in the manifestations of our life of relation, and both are the seat of changes dependent on causes acting usually on very remote parts of the body; both require for the relief of some morbid condition prompt and skillful surgical interference.

In making a hasty examination of the anatomical structures of the larynx, we find entering into its composition mucous membrane, connective tissue, fibrous and elastic tissue, cartilage, voluntary muscle, and a large number of blood vessels, nerves and lymphatics; all of these undergoing just those diseased processes, which are found to affect similar structures in other parts of the body. Thus, the mucous membrane is subject to catarrhal and ulcerative processes, it is the seat of morbid growths, benign or malignant in character, it is liable to

acute and chronic congestion, and edema, it is involved in the eruption of various specific fevers, and may slough or be covered with diphtheritic deposit. The cartilages are subject to inflammation of their own tissue and of the perichondrium surrounding them; they are subject to calcareous deposits, to ossification and to anchylosis, as also to necrosis en masse. In the connective tissue we have phlegmonous inflammations, the muscles are liable to degeneration and to paralysis, organic or functional in their origin; the nerves of the larynx may be affected by peripheral and central changes, and its blood vessels participate in those alterations which affect the whole vascular system throughout the body. It is never to be forgotten, as has been repeatedly pointed out, that diseases of the larynx derive their importance not so much from the extent of tissue involved, nor even from the violence of an inflammatory process, as from the peculiar position of the parts, which makes a very slight and only temporary obstruction an affair of great gravity.

No more convincing plea could be advanced to those still doubting the utility of making of the diseases of the larynx a separate study, than a hasty review of the labors of the sub-section for diseases of the throat at the International Medical Congress of last year, from which it will appear that in no department has there been a greater increase in the scientific and practical knowledge gained in the last few years than in this. After listening to an introductory address from the president, there were brought up for a free interchange of opinions, the following subjects, as representing some of the most important points connected with the subject:

1. The local treatment of diphtheria.
2. The pathology of laryngeal phthisis.
3. Laryngoscopic signs in connection with diseases of the motor nerves of the larynx.
4. Neuroses of sensation of the pharynx and larynx.
5. Extra- or intra-laryngeal treatment of benign neoplasms of the larynx.
6. Results of mechanical treatment of laryngeal stenosis.
7. Indications for complete or partial extirpation of the larynx.
8. Galvano-caustic method in nose, pharynx and larynx.
9. The actual cautery in certain forms of laryngeal disease.

10. Adenoid vegetations in the vault of the pharynx.
11. The nature and treatment of ozena.
12. Influence of the female sexual organs on the origin of the voice, etc.
13. On the part played by the free portion of the epiglottis in deglutition.

The time is too short to admit of any review, however cursory, of the work accomplished, but the array of subjects is, in itself, sufficient guarantee of the earnestness and zeal of the members of the association.

As representing especial points of interest, not only to the specialist, but to the general practitioner, I have ventured to take up the first two of these subjects, and to bring them more in detail before the Society. With reference to the pathology of laryngeal phthisis, it may truly be said that no subject of greater scientific interest or practical import could well come up for discussion before a medical society, and the prominence which was given it at the congress was certainly owing to the general recognition of the necessity for further information on this subject of all others. It is further remarked, that notwithstanding much difference of opinion as to the existence or non-existence of primary tubercular disease of the larynx, all were agreed that cases of this kind are speedily followed by diseases of the lung, and, according to some, invariably, according to others, usually terminate fatally by the development of the pulmonary affection. Many observers have alluded to the fact, that it is not infrequent to see what at first appears as a simple ulcer, subsequently become tubercular, while to others the ulcer is tubercular in its nature from the outset, although miliary tubercles may not be present. The fact of the occurrence of this peculiar product of inflammation (i. e. the tubercle), in the mucous membrane of the larynx is now pretty generally admitted, as is also the temporary curability of these ulcerations; temporary only, because unfortunately, up to the time of this writing, nearly all of these cases have succumbed to the pulmonary lesions which accompanied or followed the laryngeal trouble. It is not difficult to understand the discrepancy of opinion on the point of primary laryngeal tuberculosis, for miliary tubercles, when scattered, even in very large quantities throughout the lung substance, give rise to no symptoms by which their presence might be recognized or even suspected, so long as they remain isolated, a fact that was stated by Skoda as early as

1836; and the recogition of the diseased process in a part that is now so accessible as the larynx may thus precede the discovery of similar disorder in the deep seated portions of the respiratory tract. Disregarding, now, all past views on this head, we find in the most recent literature of the day a contribution, which, if confirmed, bids fair to revolutionize much of what has been previously thought and written, and promises to shed light on many hitherto unexplained problems of pathology and therapeutics. In No. 15 of the *Berliner Klinische Wochenschrift*, Dr. Robert Koch, an observer whose name is familiar to many in connection with his researches on the biology of bacteria, published in *Cohn's Beitrage*, and his investigations on the infection of wounds, published the result in the carefully conducted series of experiments on the etiology of tuberculosis. His previous labors are the best guarantee of his care and reliability, and it were unjust to refuse consideration to statements that come to us with the authority of his name. The result of these observations, briefly stated, led him to the conclusion that tuberculosis is always a specific disease, whose development is associated with and directly dependent upon the entrance into the body of a microscopic organism, to which he has given the name of bacillus tuberculosis; this parasite differs from all others in the reaction it manifests with peculiar coloring fluids, and in the slowness of its development. The parasite usually gains entrance into the body through the respiratory tract, which would explain the great frequency of involvement of the lungs; it would also explain the possibility of some of these low growths becoming arrested in the larynx and leading to a primary affection there, such arrest being all the more likely to take place on a surface denuded of its protective covering of epithelium and roughened by the inflammatory process it has undergone. As pointed out by the author, the confirmation of these experiments and the acceptance by physicians generally of the theory, that tuberculosis is always a specific disease, will doubtless lead to improved methods of treatment, particularly as far as prophylaxis is concerned, and will thus enable the physician to combat more effectively a disease which carries away fully one-third of all persons dying in middle life. The idea of the bacterial origin of tuberculosis is not a new one, having been asserted by Cohnheim, Klebs, Tappeiner and others; the satisfactory demonstration and isolation of

the virus, however, having not been successfully accomplished until Koch investigated the matter.

Whatever course future developments may take, the early existence of tubercular disease of the larynx must now be recognized as an established fact, and its prompt and early recognition with a view to treatment is a point that requires no further discussion to impress every physician with its vital importance. The relatiòn of local to general processes is here again made manifest, and the field, illuminated by the laryngoscope, may prove of the utmost value in prognosis, and let us hope, in therapeutics. How, now, will we recognize the phthisical ulcer, and what must it be differentiated from? Is there a typical appearance for the manifestations, and do all ulcers adhere closely to this type? In many cases, no doubt, the presence of phthisis in the larynx may be recognized by the examination limited to that organ, that is to say, the first glance of the picture revealed by the mirror is sufficient to settle the diagnosis without calling in to our aid either the previous history or the physical examination of the chest, yet cases do occur where it is a matter of great difficulty, even with all accessory means of information, to come to any definite conclusion. It would lead us too far to consider in detail all the points involved in a differential diagnosis of tubercular from other varieties of ulcers, but the distinctive signs of tubercular ulcers according to the thesis of Moure, are:

The hoarseness of voice, passing into complete aphonia, cough with mucus, and later with muco-purulent expectoration.

Atrophy of the cervical and sub-maxillary glands.

Rosy hue of the mucous membrane in the early stage, with a proneness to be situated in the region of the arytenoid cartilages.

The erosions present a grayish appearance, an illy defined border, and are not raised above the surface.

The tubercular ulcer is almost oval or round with jagged border, and is usually found in the arytenoid region.

According to Cohen, the most frequent of the laryngeal lesions in phthisis is a pyriform swelling of the arytenoid cartilages, due to an infiltration of lymph cells in the connective tissue, with a rounding off of the aryepiglottic fold; this is followed by thickening and infiltration of the vocal bands and erosions in the neighborhood of the vocal process of the arytenoid cartilages.

While much has thus been done toward the elucidation of the diagnosis, pathology and prognosis of the affection, it is to be regretted that our progress in therapeutics has not kept pace with this advance and that to many there is no other plan feasible than the mere palliation of symptoms, tubercular ulcer being to them synonymous with incurable ulcer. Experience has shown that it is certainly wiser to proceed symptomatically than to adopt such heroic treatment as that of Schmidt, who, in addition to the use of antiseptics by inhalation, would relieve all trouble by making crucial incisions into the swollen mucous membrane. The use of caustics and of all strong astringents has received pretty general condemnation and the principal line of treatment followed in the past has been the insufflation of morphia and other anodynes for the relief of the pain occasioned by each act of swallowing; and, while the healing of tubercular ulcers has been occasionally though but rarely observed under this plan, the general verdict has been one of dissatisfaction with the results obtained. Lately some experiments have been carried on with iodoform; their number is not sufficient to enable us to speak with any certainty, but a brief resume of an article published by Frankel* may lead others to attempt a cure with the new remedy. It may be administered in powder by insufflation or in the form of spray from an ethereal solution or by adding iodoform to water and then heating, when the vapor of iodoform will pass over with watery vapor. It was seen after its application in the manner stated that the ulcers showed a more healthy action, the general condition of the patient improved and, although complete cure was not observed in any of the cases selected for the experiment, in all of them a marked improvement followed its use. The only and great objection to this treatment is the pungent odor of the iodoform, which, however, patients soon learn to neglect and to which they may willingly submit in view of the relief afforded them.

On the identity of croup and diphtheria. The influence of pathology on the prevalent views with reference to causation and also as to therapy is very fully and clearly illustrated in the ever-changing and, as yet, not fully complete cycle through which the ideas of the profession have been gradually passing upon the subject of the difference between diphtheria and croup. Described for

*Berliner Klin. Wochenschrift, 1892.

the first time with any degree of accuracy by the Spanish and subsequently by Italian physicians, our knowledge of diphtheria was most signally advanced by Home and Bretonneau, by the latter of whom the identity of croup and diphtheria was clearly recognized and insisted upon although he himself protested against the acceptance of the presence of a membrane as distinctive of croup, having observed such a formation as secondary to typhoid, scarlet and other fevers. Of all the articles that have appeared in our day none is more worthy of attention or enters more fully into all the aspects of the subject historical, pathological and clinical than the contribution of Rauchfuss to Garhardt's Cyclopedia of Diseases of Children, in which he shows how after having been for a long time considered as separate affections, croup and diphtheria have now come to be regarded by the majority of those who have lately given their attention to the subject as identical in nature. The pathological distinction, based upon the facility with which the newly formed membrane could be separated from the underlying tissue has been found to be an insufficient, unreliable landmark, and is even less reasonable than the division made by Rokitansky, who considered croup as an exudative affection, while diphtneria was a disease which led to sloughing of the mucous membrane itself. It is difficult to conceive any difference between an exudation which, in the one case, was found upon the surface of the mucous membrane and slightly adherent to it and an exudation which was deposited partially in the membrane and therefore somewhat more adherent, and when we consider that a membrane, involving primarily the superficial layers of the mucous coating becomes separated at a later stage and may thus lie in reality upon the surface we can see how purely artificial is the distinction referred to. Now that we have in support of the doctrine of identity the names of such eminent clinicians as Rilliet and Barthez in France, Jenner in England and Traube in Germany, with the concurrent opinion of many specialists, it is time that a more careful nomenclature were introduced and that we ceased to speak of true and false, catarrhal and spasmodic croup: that since true croup is different from pharyngeal diphtheria only in its position, we should designate it as laryngeal or tracheal diphtheria as the case may be. The doctrine of the parasitic origin of diphtheria has been purposely disregarded in speaking of the etiology of the disease, as not influencing the

identity of the two affections. While we must admit that much evidence is accumulating in favor of such a view, the proof has not been clearly rendered, and we can only say with Muclagan that the experiments thus far made would only show the presence of micrococci as an invariable accompaniment of the disease and not that they are the sole or even the main agents in its causation. To many the similarity existing between the two affections in regard to pathological changes will not appear as a sufficient reason for accepting this teaching so long as many clinical facts can be cited apparently contradicting it, and, as has happened in the past, attention will now probably be called to the absence in croup of severe constitutional affection, of the marked epidemic character and of the disastrous sequelae characterizing pharyngeal diphtheria. Let not the hasty comparison of these features deceive us with reference to the true cause of the affections; a hurried perusal of the literature of the subject will convince even the most skeptical that it is not after all so difficult to reconcile the difference, to bring together facts seemingly so antagonistic and to harmonize into one the many interpretations of the same phenomena. As regards the constitutional prostration so severe in diphtheria and often wanting in croup we have here differences not greater in any particular, than those characterizing the milder and more severe forms of any epidemic of acute infectious disease; how many cases of scarlatina are there without eruption, or throat affection or subsequent albuminuria? how many of typhoid without cerebral symptoms and general prostration? Moreover, are there not cases of croup beginning with most pronounced general depression?

The difference in the symptoms usually manifested is due to the difference in function of the parts, and the peculiar interference with respiration, the change in voice, the gradual supervening asphyxia are all mechanical effects of the obstruction to the air passages; the cyanosis, lividity of surface, the anxious face and dilated pupil, and the gradually failing powers being but the expression of that steadily increasing carbonic acid poisoning upon which the cessation of life finally depends.

Another reason which has led many to reject the doctrine of identity of cause is found in the occasional occurrence of isolated cases of croup, but are there not isolated cases of diphtheria as well? And need croup be in every case an epidemic disease before we can receive the

idea of its relationship with diphtheria? Moreover, the sporadic cases of both croup and diphtheria are manifestly communicable by contagion, just as are those occurring during the prevalence of an epidemic, and the mere fact of their isolation is not a strong argument for their difference of origin. Many cases of croup are observed to complicate pharyngeal diphtheria and during the prevalence of an epidemic, it is not uncommon to find the process beginning in the trachea and extending upward, the so-called ascending croup.

More might be said on this and other weighty subjects did time permit; but the paper cannot be brought to its close without referring to the necessity for more frequent and more careful examination of the larynx in autopsies and the possibility of using the laryngoscope in many cases of throat disease in children, two departments in which there is still great room for improvement.

In regard to this subject we have the dictum of one of the most famous of German clinicians, whose name is doubtless familiar to many, Bartels, of Kiel, who says, "I have thus far seen only one form of croup." He gives in extenso the account of an epidemic in his own district, and takes the opportunity to state that for a certain time there were only observed sporadic cases of croup; then, following upon one of these cases which extended upwards into the larynx, an epidemic of pharyngeal diphtheria resulted and since that time the disease has never completely disappeared. The fact that croup prevailed first, and that its extension to the pharynx in the one case gave rise to other cases of diphtheria, is very significant. The identity between the two diseases being thus established we should naturally expect a similarity of treatment, and this, as far as general treatment is concerned, is actually found to be the case, but the difference in local treatment must naturally follow the local symptoms. In diphtheria, as there is always danger of secondary infection from the local trouble, we must endeavor as speedily as possible to remove the membrane, and thus prevent as much as possible, the constitutional symptoms. In the discussion at the International Medical Congress the decided majority of opinion was in favor of local treatment by means of inhalation of warm antiseptic spray, and was decidedly against the use of strong caustics and astringents. A new remedy recommended by Bouchult is worthy of favorable consideration. It is papayotin or vegetable pepsin, which digests and

softens the membrane more speedily and effectually than lactic acid or lime water, which have been so frequently vaunted as curative in the affection. In croup, tracheotomy, first made by Butoman, has found many advocates, and the simple operation which if performed at a sufficient early period reduces the mortality to 18 per cent. is certainly one of the greatest advances of the surgery of the century.

CANCER.

By G. W. GARRISON, M. D.,

Utica, O.

Reflection concerning scirrhous growths, leads to the inevitable conclusion that cancer cells and normal cells of the body cannot be differentiated by the aid of the microscope or chemical analysis. Some of us have beautiful plates in our libraries illustrating the caudate shape and size of cancer cells, but when we are asked the question, Cannot cells be found in a healthy organized structure similar to those which the malignant growth reveals under the microscope? We are at once smitten with silence, for no mechanical or chemical aid affords us any help by which we can say that a certain cell is cancer and another a true physiological cell.

The question then suggests itself, What is cancer? I answer, perverted nutrition of the part wherever located, but where true constructive cells leave off and destructive begin I cannot say. All I can do at the outset of a suspicious wart, scab, or enlarged gland or organ, is to withhold an opinion until I can determine by the eye or tactile sense whether or not my patient is to become the unfortunate victim of a carcinomatous affection.

Cancer is most generally, if not altogether, acquired, i.e.:—Cancer first starts from a hurt, as irritating a wart by strong acids, thereby causing it to become inflamed and altering its nutrition. We cannot for a moment entertain any idea of the hereditary transmission of disease, let it be scirrhus or not. Nine-tenths of all persons dying of cancer are well advanced in years. You ask why cancer seems to run in certain families. I cannot say any more than you can explain why some infants have fits during dentition, and some of them die of covulsions. But should you find out that one of the parents had fits while

an infant, would that be sufficient reason to prove that the hereditary doctrine is correct, and that fits even pass down from parent to child? Or, again, why is it that so many persons of the same family die of phthisis pulmonalis? I cannot tell; but this whole subject of the hereditary transmission of disease is now rapidly revolutionizing the opinions of the best medical practitioners of the present time. I believe in the doctrine of the "survival of the fittest," and that we are born on earth with equal organs and physically perfect, unless some injury has been received by the fetus while in utero. In view of the fact, then, of heredity, where is there a living person that has not the seeds of some hereditary disease lurking within his system? You are aware that some individuals have a peculiar and unexplainable tendency to cancer; the same thing may be said of some families having more accidents occurring to them than others. Why it is we cannot say, but the fact is apparent. We all have a tendency to second childhood, as well as a tendency to gray hairs; but these changes are not hereditary, for they are the common lot of man.

Again, to prove that cancer most generally comes from a hurt, either external or internal, is the fact that all the cases of cancer of the mammary gland coming under my personal observation, have been in barren females or maiden ladies none less than fifty years of age. In these cases the glands seemed to be well formed, and the majority of the patients attributed their disease to a bruise or a caking of the gland at the turn of life, thereby causing an irritation and hyperemia of the part to such an extent that the breast seemed never to recover its usual feeling, but there remained a deep hard lump back in the gland, or a scaley affection about the nipple, and from this point the trouble commenced. Our text-books mention cases of cancer in women who have borne children and nursed them, but the number of such cases, or of cancer of the uterus in such females, is relatively quite small. Again, some people are more liable to catarrhal affections than others, owing doubtless to their not being possessed physically of the power to resist diseases of the air passages in certain vicissitudes; why may not the same hold good in cases of cancer? We find some individuals with scaley or warty growths about their lips or hands; if left to themselves until the possessor becomes 40 or 50 years of age, they will result in cancer transformation on the slightest hurt or bruise. We cannot

find, perhaps, a single family in which, if its history be carefully traced, will not be found some cases of death from cancer; hence the argument that we are individually responsible, to a great extent, for all our ills. Once becoming convinced of that fact, we will strive more faithfully as medical men to become better acquainted with the etiology of disease.

Look at this assembly of doctors, hailing from various parts of Ohio; how careless and thoughtless some of them are to keep the air of this room permeated with tobacco smoke, caring more for their fragrant cigar than to listen to papers presented. It would not be at all surprising if some of us, who are not given to such a filthy habit, from being subjected to the prevailing poison of this room, should go away from here with sufficient poison imbibed to cause the lungs to take on some wasting disease or consumption. Instead, then, of getting our minds well stored with ideas, some of us may be only breathing in death to ourselves, dealt out to us by the fraternal brotherhood, and when such a victim goes from this association of physicians to become the subject of a cough with all of its concomitants, then the doleful saying will come up from some of these sons of Esculapius here present, that his consumption was hereditary!

But let me present another picture: while some may not smoke they may be given to taking what we call excito-motor stimulants. as we see so much going out and in during the proceedings of this convention which shows that there are greater attractions without. This drinking practice, however, may ruin the unfortunate person addicted to the habit, as after awhile, let him be an eminent doctor or not, the rot-gut will produce a gastric irritation which will eventuate, in some instances, in cancer; and again we shall hear the doleful saying that the poor fellow was a good physician, when sober, but his death was from hereditary cancer, as away back his grandmother died of cancer of the lip, at her 80th year, after smoking an old clay pipe for the past 60 years of her life. And so the story goes, and those who drink keep on drinking and those who smoke continue puffing. I am tired of so much heredity; and from my experience of twenty years' practice I have come to the conclusion that the doctrine of heredity is so convenient (like that of biliousness, or torpid liver in acute diseases) that we dodge our duty and stop investigation, simply by sliding, as it were, under the shadow of that great rock in a weary land, in order to screen our ignorance.

Classification of Cancer: Right here I will say for once, that cancer is cancer wherever found. When it has sufficiently undermined the system, then we have what is called the cancerous cachexia. At this stage of the disease cancer becomes constitutional, and should it be removed it will most generally return, either in the cicatrix or elsewhere.

Cancer is known by the following names, viz: Scirrhus, medullary, mellanotic, osteoid, epithelial, colloid, encephaloid and villus; epulis and keloid are milder forms.

The location of cancer may be the lip, nose, cheek, chin, esophagus, tongue, rectum, penis, bladder, bone, prostate, gland, breast, testicle, eye, scrotum and stomach. These are primary locations. Secondary cancer may occur in brain, lungs, liver, kidney, in fact in any part of the body.

Cancer is a disease of adult life, but it may attack at any age; not even the fetus in utero escaping, nor the infant at the breast. Cancer rapidly runs its course when it attacks an organ in the full vigor of functional activity, but as a general thing it begins after an organ has commenced to degenerate, as in the breast and uterus.

Cancer commences as a local disease and becomes general, or constitutional, as it exerts its influence as a local irritant, at the same time perverting the nutrition of the part, thereby disseminating its elements by contiguity of tissue to other parts. This dissemination, or infiltration, in the adjacent tissue shows its malignancy. A benign growth remains loose, and can easily be moved about in the tissue, whereas cancer cannot. Where the cancer is located, the secondary growths partake of the same nature as the primary; thus osteoid will produce osteoid, mellanotic will propagate mellanosis, and so on, each cancer-growth, like a parasite, growing at the expense of the tissue or organ in which it is situated.

The great and all-important consideration, for the patient, is an early removal, in order to establish a cure. When these malignant growths are rightly treated, a large majority can be permanently cured.

TREATMENT:—This resolves itself into two considerations, and only two, viz.: Escharotics, and Excision. In the treatment of cancer, we must persevere with vigilance, contending for every inch of ground gained.

The purpose of this paper is not to quote any authority specially, but simply to give a summary of about thirty-

five cases of cancer treated by myself, and also to give my practical deductions from the same. When I commenced treating cancer, I usually cut them out, as it was quicker done and less painful to the patient; but a few cases sufficed to show me that that was not the best procedure, as a large proportion of them returned in the cicatrix or some internal organ. Of late, therefore, I employ escharotics most uniformly, and my results during the past ten years have been all that could be desired, with scarcely a single instance of return of the disease, the ages of the patients ranging from 56 to 71 years.

It seems to me, somehow, that escharotics and cancer-cells have a peculiar affinity for each other, and as the oil in the lamp moves towards the point of combustion, after the wick is ignited, so, it appears to me, these cancer-cells are attracted to the paste, and the adjacent sound flesh is not destroyed in any greater proportion than is the wick while the oil is being exhausted. In applying the paste I cover all the cancer, allowing the paste to lap over the healthy flesh about ½ to 1 inch. I make the paste sufficiently thick that every quarter inch of paste will destroy at least one inch in thickness of the cancer. After all the malignancy of the part is destroyed by the paste, the remaining eschar will become detached, by the establishment of a line of demarkation between the healthy and dead mass. The neighboring lymphatics will become deprived of their swelling and the foreign substance cast off, leaving a nice smooth granulating surface. Should all the malignancy not be destroyed, I proceed as before with paste, destroying all granulations which have an unhealthy appearance. To heal the open surface, a systematic course of strapping with rubber adhesive plaster must be kept up, until the wound is entirely cicatrized. Borated cotton with cosmoline is now considered the best protection to the granulations while cicatrization is going on, by protecting the granulations during the strapping treatment. The success of the treatment depends largely on not getting the granulations injured, thereby causing a source of irritation in the sore, but on speedily healing the wound by coaptating the parts as nearly as possible with adhesive straps; or we may facilitate the healing by skin grafting.

The Paste:

℞. Chloride of zinc..... ʒij
Flour or starch..... ʒj
Boiling water..... fʒj

Mix and spread over the part to be removed. Allow it to remain on forty-eight hours, and repeat if necessary. The paste will destroy tissue to about three or four times its own thickness.

A second paste, for large malignant growths, should be applied in a similar manner to above and removed every forty-eight hours for at least three dressings. This paste is made as follows:

℞. Zinc chloride..... ℥j
Starch..... ℥ss
Boiling water..... ℥ss
Mix. Add;
Ext. podophyllin..... ʒij
Red sanders..... ℥ss

Mix, and apply as directed before.

An escharotic for the removal of cancer from the oral cavity and os uteri, is made in the following manner: Deprive sulphate of zinc of its water of crystalization, pulverize, and add enough chemically pure sulphuric acid to make a paste. The mouth and gums must be well protected with cotton batting before applying this paste. After it is applied leave it on for three or four hours, remaining with the patient all the while. Then remove the caustic, wash with warm water, apply sweet oil, and then remove the cotton. About three or four applications of this kind will be sufficient.

One great precaution in the treatment of cancers with escharotics is to thoroughly explain to the patient, that the pain for several hours or days during the application of the paste is almost unendurable, but a good understanding at the outset makes the sufferer more resigned to the torture, and more easy to get along with. In treating cancers located on the tonsils, uterus, cheek, penis, lip and rectum, during the past twenty years, all the cases to which I have had an early call have recovered, and so remain to the present time, except about a half dozen. I have had four cases of cancer of the mammary gland within that time, with two successes and one death; the second one will succumb within another twelve months. In this last case I have removed (since extirpating the entire organ) several secondary growths, but still the dis-

ease returns more stubborn than ever and now there are gastric disturbances showing themselves and I fear that it has by metastasis attacked the stomach. My other two cases are doing well. In extirpating cancer, I fear that we do not remove enough of the surrounding healthy structure. Especially in cancer of penis and mammary gland. It will not do to simply hull out a small lump from the mammary gland; the entire organ should be removed, down to the pectoral muscle, and even that muscle, if needs be, together with all the axillary glands. Besides it is well to sear the raw surface with a red-hot iron, in order to destroy any cell that might remain as a nucleus for a secondary growth. When this course is pursued, the work is thoroughly done. Should a lump return within six months, remove it, and keep on removing recurring suspicious growths until they either stop croping out, or by metastasis the liver or some other internal organ has become the seat of the disease. In some cases which I have lost, I was convinced afterwards that at the first operation I did not sacrifice enough of the adjacent tissue with the malignant growth, but was disposed to comply with the feelings of the friends, hoping that by removing only a small piece that would suffice. Experience and observation have taught me otherwise since. If the breast is the seat of cancer, the entire gland must be sacrificed; the penis, the greater part of that organ must be amputated, and so on in any other part of the body. In applying all these escharotics adhesive plaster should be used over all the cancer except at the point where you wish the paste to destroy the tissue, where a hole should be cut sufficiently large. The object of this precaution is to save the oozing from excoriating unnecessarily.

Perhaps I have taken the unpopular side of the question, in reference to the hereditary transmission of cancer; but be that as it may, what I have written is my honest conviction, expressed without any mental reservation.

EXTERNAL PERINEAL

URETHROTOMY.

By P. S. CONNER, M. D.,

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CINCINNATI, O.

Two facts are familiar to us all:—1st, that urethral strictures are of common occurrence; 2d, that they are not only troublesome, but dangerous, because of the vesical and renal diseases consequent upon their presence, and the disastrous results of the frequently occurring extravasations of which they are the indirect cause. When the diminution of the calibre of the urethral canal is not so great but that a moderate sized bougie, say No. 4 or 6 French, can be readily passed, and the stricture is located behind the peno-scrotal angle, the treatment may be by dilatation, divulsion or division, according to the preferences of the operator, and the time that can be devoted to the care of the individual case, the first mentioned method being the safer but the more tedious. But in the unfortunately not seldom met with cases in which from ignorance or neglect the contraction has been permitted to go on until only a very small, even a filiform, bougie can be worked through, and that with difficulty; when over-exercise, exposure, excess, or a slight change in the constitution of the urine will suffice to render the stricture impermeable, and cause complete retention, in such cases the propriety of freely laying open from without the affected portion of the canal becomes a question worthy of and demanding the most serious consideration. Gradual dilatation requires time, carefulness and skill, and during the earlier periods the

patient is, of necessity, exposed to the risks of urinary retention, of urethral rupture behind the stricture, and of increased disease of the bladder and kidney. A certain amount of enlargement of the calibre of the canal will, as a rule, be required before divulsion can be made by those not especially skilled; for though the use of a filiform guide may enable the surgeon to force the divulsor through the narrowed portion of the urethra, yet if such guide is only fastened on the extremity of the instrument, the latter may be, and has been in many cases that have never been reported, driven through the urethral wall, and if passed through a tunnelled end may, as I have myself known to occur, be cut off, leaving a foreign body in the urethra, the extraction of which is not easy. And further, divulsion though usually a safe method of operating, is one by no means devoid of danger, as it may be the exciting cause of sudden, complete and fatal suppression of urine. In one of my own cases in which the bursting of the stricture was easily made, kidney action was almost absolutely arrested and death occurred within seventy-two hours.

Internal section, which is undoubtedly the proper treatment for penile strictures, may, when the contraction is located in the immediate vicinity of the anterior face of the triangular ligament, be followed by septicemia, and is often the cause of troublesome and at times dangerous hemorrhages. And here again, some dilatation will ordinarily be required to be made before the cutting instrument is used. Division from without has long been, and is still by some of the best surgeons of the world, regarded as a procedure applicable only to cases in which there has just occurred an extravasation from rupture, those in which fistulæ are present, or when the stricture is impermeable, or of traumatic origin, and therefore liable to early recontraction; it being held that if any instrument, be it never so small, can be carried through, no external cutting should be done, such section being dangerous to life and liable to leave behind such "deplorable conditions" and "lamentable states" in the way of fistulous openings as were so graphically described and pictorially illustrated by Lizars thirty years ago.

But there can be no special danger to life in a clean cut through the middle line of the perineum of such extent as to permit of the ready outflow of the urine. Patients die after external perineal urethrotomy; but not so very often. Of my own cases, and, though I have

kept no record of them, I think they must number nearly if not quite fifty, perhaps more, only one that I can now recall has proved fatal; and death in this case was due, not to the operation itself, but to the pre-existing disease of the bladder and kidney; and the same is true of the vast majority of the fatal cases. Incomplete closure of the cut will undoubtedly occasionally take place, but, except when the operation has been made through the diseased tissues of an already fistula-riddled perineum, a second and limited division will usually secure a satisfactory result. Not only will the patient derive great comfort from the immediate removal of the obstruction to the outflow of urine, which it is impossible for him to have when gradual dilatation is resorted to, but in such removal lies the most potent means of stopping the progress of and producing the relief of the chronic cystitis, which in a greater or less degree is always present in these cases of long standing tight strictures. Confinement to bed for three or four weeks, however objectionable it may be in itself, is a matter of little importance, if the operation which necessitates it puts the patient in the way of safely and, indeed, quickly recovering from a dangerous condition; and if, as certainly is the case, the enforced quietude has a beneficial influence upon the existing inflammation of the bladder.

If a guide, no matter how small, can be carried through the canal, external perineal urethrotomy is an operation that any one can perform who is competent to treat a stricture at all. The more skilled the surgeon the more quickly and easily he can make the section, but carefulness and knowledge of the region involved is all that is indispensably necessary. It is a matter of little importance whether ten minutes or an hour is occupied in the division, while it is of the highest necessity that the operator keep to the line of the urethra and do not diverge to either side, and this he can readily do if opening into the uncontracted canal in front of the stricture he follows with the knife the easily seen guide. If no director can be introduced, the difficulties of the operation are vastly increased, and it may be, and often is, absolutely impossible to make the division along the course of the urethra, displaced as it is by the irregular thickening of the parts around.

Even the most skillful of operators may fail under such circumstances in finding the opening into the posterior

part of the canal; but generally the fullness of the urine-distended urethra will furnish the needed indication, or the finger will be able to feel the opening in the anterior face of the triangular ligament. Even if the operation must be left unfinished, and the catheter cannot be introduced, the section may yet prove of service, the urine finding its way out in larger stream and with much more ease to the patient. It is in these very cases of practically impermeable strictures that troublesome and tedious as it may be, the performance of the external section affords the readiest way out of the difficulties of the situation. The oft-quoted declaration of Syme and Liston that where urine can find its way out an instrument can find its way in, is true and yet not true,—true in theory, not true in practice. Aspiration of the bladder will not seldom be found to be followed by such lessening of the congestion of the urethra and relaxation of its walls as that in a day or two, or more, at least a fine whalebone bougie can be introduced and external division of the stricture readily made. Of the subcutaneous operation of Teevan, I have had no experience, but am hardly prepared to see in it any special advantages over dilatation on the one hand or free division of the perineum on the other, according to the nature of the case. In the after treatment of the cases of external urethrotomy, I have never made use of a permanently retained catheter, but have preferred the daily introduction of the sound, beginning usually on the third or fourth day, though in a few cases I have left the urethra undisturbed for as long as a week without detriment to the patient. Of course, after external section, as after dilatation or an internal operation, bursting or cutting, the sound should be passed at regular periods, of from a week to a month, during the after life of the individual.

That the neglect of such after treatment is at times followed by no bad results cannot be questioned, but it is to be remembered that exceptions only prove rules. In conclusion I would only express the belief, that some little experience has brought me to, that in those cases of tight stricture in which dilatation must evidently be a slow process, and in which there is a very considerable amount of vesical disease, division of the contracted part of the canal through the perineum secures a better result, local and general, than any other method of treatment.

Discussion.—Dr. Pooley said that external perineal urethrotomy was his favorite operation, and he was glad the writer advised it. The doctrine that "where water can come out, a bougie can go in," is not true either in theory or practice, and after failure with bougies the knife is the best means of relief and cure.

Dr. Vance said there was much to be said in favor of the operation advocated, but he preferred the internal operation. In the great majority of cases, a single filiform can be passed; by letting this remain for twenty-four hours, a No. 6 or No. 10 can be passed, and then internal urethrotomy can be performed, with a better result than that by the external incision.

Dr. W. J. Scott said he had several times failed with filiform bougies, but when he cut down he ordinarily had little trouble. In these cases he adopted the following method: pass a sound of fair size *to* the stricture; cut down, taking care to make an incision *smaller* than the end of the sound; withdraw the sound a short distance, and then with a small probe, working through the incision, find the passage, follow the probe with a director and then use the knife. Pass a catheter, which is to be left in for some hours, until inflammatory deposits are thrown out so as to correct the curvatures. He had never failed with this method.

SOME GENERAL REMARKS ON

OTOLOGY

By W. W. SEELY, M. D.,
Professor of Diseases of the Eye and Ear, Medical College of Ohio.

CINCINNATI, O.

Treatment of diseases of the ear is no exception to the treatment of diseases of other organs, and we all know that it, like the Ptolemaic system, is subject to occasional disturbance.

Till the era of catheterization, the therapeutics of aural diseases were in as imperfect a state as those of ocular troubles in pre-ophthalmoscopic days. Ophthalmology seemed to clear the way for otology and both realms are now pretty well out of the grasp of quackery.

Seventeen years ago I began the treatment of middle ear affections by means of the catheter, making the first passage of it, so far as I am aware, for therapeutic purposes, in this part of the country, and for many years it was the custom to inject various fluids and vapors into the tympanic cavity; irritants and absorbents, so-called, for the chronic varieties; astringents for the acute; in a word making treatment of this mucous membrane quite an accurate copy of that for the conjunctival.

For quite a time before I was aware it had been recommended, I devised a probe of whalebone for dilating strictures of the Eustachian tube, copying the treatment of nasal duct stricture, and had the usual experience of inflating the necks of two or three patients, till I hit upon a probe made of fiddle-string. During my early experience, there was rather a reaction against the idea that middle ear affections depended chiefly upon throat troubles, and the treatment of the latter played an unimportant role.

Following the lead of ophthalmic surgery, Paracentesis of the membrana tympani early came into vogue, and many punctured all membranes where secretion in the drum cavity could be diagnosticated. At the present day, in my own practice, and, if I am not in error, in the practice of most, intra-tympanic injections play a very unimportant role, in fact are the exceptions, and the state of things now and that of a decade and a half ago may perhaps represent the extremes of fluctuation, the truth lying somewhere between. Even the catheter itself has been found to be an instrument patent alike for good and evil, for undoubtedly its abuse has been great, and doubtful results must be recorded from it even in skilled hands. It came near being sung of as the wrath of Homer's hero of old, which paraphasing Pope would run——

"Catheter's harm, to ears the direful spring
Of woes unnumbered."——

till a second rescuing reaction set in, and to-day it is recognized that naso-pharyngeal affections bear quite the same relation to middle ear troubles that affections of the Schneiderian membrane bear to lachrymal troubles, and the Eustachian tube and middle ear stand a show for fair treatment.

While nasal and naso-pharyngeal mucous membranes in the beginning of the reaction were badly abused by injections anterior and posterior, and astringent swabbings with resentments in the shape of acute inflammations of the middle ear, milder means have come in.

Again, we are recognizing more and more the nature of mucous membrane troubles, learning at the same time that what is seen on the posterior wall of the pharnyx is but a portion of the picture hidden in the naso-pharnyx, and of which it is often but an extension. If the nature of catarrhs is parasitic, as I take it to be, violent means are out of place, and astringents and caustics must fall for lack of basis, crowded down by remedies that have a toxic effect on parasitic growths.

At the present day the voice of the profession is opposed to indiscriminate puncture of the membrana tympani. It would seem plausible that, given a tense membrana tympani, puncture would be in place, and doubtless often would be if there were no other mode of relief, such as is offered by the Eustachian tube. Paracentesis membranæ tympani doubtless sprang from paracentesis corneæ as the latter from paracentesis thoracis, and perpetuates the error of the ocular operation, and I have always

claimed and taught that paracentesis of the membrana tympani had little to support it except the mistaken function of the same operation on the eye, *i.e.*, to evacuate the morbid products in the cavity. I have never made a paracentesis of the drum-head simply because I have been able to relieve intra-tympanic tension without it. I have made paracenteses of the cornea by the hundred, not for the purpose of removing morbid products from the anterior chamber, but because it was the quickest and most efficient means of relieving intra-ocular tension. At present the operation, small in itself, but so dreaded by patients, has but little more than an historical interest to me, since we possess in the myotics such efficient and pleasant relievers of exaggerated intra-ocular tension.

The introduction of boracic acid for the treatment of purulent otitis externa and media is one of the most important therapeutic contributions to modern otology.

As you are all aware, suppurative otitis media chronica has always been an approbrium otologicum. With the ideas of to-day and the modes of carrying them out, this state may be fairly regarded as under our control.

Assuming a parasitic basis for suppurative otitis, and practically all that is needed therapeutically is the parasiticide.

Cleanliness, with the absorbent cotton and probe (not the syringe), along with inflation of the middle ear, put the parts in the proper condition for the toxic agents, if any are needed. In no condition does blind zeal do more harm than in otorrhea, and hence in no disease may we look for more examples of what the Germans call an *Artzenei-Krankheit.* Often in small children cleanliness and inflation suffice, and in no uncomplicated case should medicines be used till their necessity is demonstrated. A patulous Eustachian tube is well nigh a *sine qua non* of success, hence the extreme importance of inflation in cases of closure; in others it dislodges the secretion in the middle ear, bringing it into the perforation where it can be entangled in the cotton and brought out. I take special pleasure in calling attention to this point at a meeting of this Society, as at a former meeting (June, 1872) I called the attention of the Society to it, and in a notice of my report in the *Medical Press and Circular* by a Dr. Pennefeather, of London, he stated that a man who could make such an assertion should be suppressed as dangerous. Pennefeather is lost to fame, while the process is a matter of every day practice the world over.

With our present ideas of the underlying cause of the suppuration it is not wise to be over-solicitous about the state of the mucous membrane, even be that state a polyposed or granular one.

Inflammation is not an entity to be destroyed by astringents and caustics. Even polypi will disapper under the desicating effects of alcohol and a fungus or granular state under boracic acid.

Large numbers of cases with a fungous condition of the bottom of the ear, in which astringents and caustics were formerly so freely applied, readily recover under boracic acid treatment.

THE RELATION

OF THE

STATE TO PUBLIC HEALTH.

AN ADDRESS BY

PROF. EDWARD ORTON,

Ohio State University.

COLUMBUS, OHIO.

Mr. President and Gentlemen of the State Medical Society:

I count it an honor to be invited to speak before you on this occasion. I yield to few in respect for the medical profession. You know the story of the young man who undertook to preach, but failed to live by his calling; undertook the practice of medicine and again failed, but when at last he took up the profession of law, he succeeded. In explaining his success, he said he had learned that men would give more to gratify their wills than they would to save either their souls or their bodies.

For my own part, I confess a somewhat greater sympathy with the men that save souls and bodies than with those who help us to gratify self-will.

I have brought before you for brief consideration, a large subject, viz: *The Relation of the State to the Public Health.* If, when I have finished my discussion, the treatment of it shall seem fragmentary and inadequate, I only wish to say that I know it to be so, but if in any way, the subject shall come to you with greater distinctness and interest by the suggestions of the hour, I shall be satisfied.

Benjamin Franklin, more than a hundred years ago, expressed a fact of the highest moment, in one of his pithy aphorisms, "*Public Health is Public Wealth.*"

Disraeli, the late premier of Great Britain, never said a truer or a wiser thing than this: "*The health of the people is the first duty of the statesman.*"

The importance of the subject transcends every other material interest of the State, because it embraces every other. Political economy calculates the money value of a human life and by this scale we are able to compute the loss inflicted upon society by untimely death, but the far larger aggregate of loss entailed by sickness must be added to the account if we are to obtain an adequate measure of the real value of public health. Statistics seem to show that for every death in a community there are twenty-five cases of sickness, and, further, that each case of sickness stands for the loss of twenty-five days of labor. The loss of time arising from sickness in Massachusetts in 1870, not including ailments of less than a week's duration or cases of chronic impairment of power, was calculated to reach a total of 24,553⅔ years.

A modern community, a great city, for example, is a wonderfully complex and sensitive organization. Vital in every point, there are a thousand ways in which it can be assailed and injured. Let pestilence strike a city and who can number the avenues through which financial loss will be encountered?

In the winter of 1871–2, small-pox became an epidemic in Philadelphia and 25,000 cases were registered there. An approximate estimate was made of the losses sustained by the city from this loathsome visitation. The estimate included the losses of railways, arising from the diminution of travel, the losses of hotels from the same cause, the losses of merchants, wholesale and retail, from suspended demand, the losses of manufacturers, artisans and laborers. To these were added the cash values of the lives that were forfeited, the value of the labor that was lost and the outlays incurred in taking care of the sick. The estimates seems a fair one, but the aggregate is $24,000,000 00.

It has also been noticed in all ages that pestilence depresses the moral as well as the physical tone of the communities that it assails, that it impresses on such communities marks of moral deterioration hard to efface, but this sort of impoverishment is less tangible if not less real, than the material losses to which I have referred, and I will content myself with merely naming it here.

From every point of view it is seen that the health of the people is the strength of the State. The accumulation of wealth is conditioned by it, the resources of the State for offense and defense depend on it. In a word, the power of the State in the present and its promise for

the future, are gauged by the vigor of the individuals that compose it. All additions to the public health are contributions of power and all abatements from it are so much withdrawn from the efficiency of the body politic.

The interest of the State in the health of its citizens is certainly large enough and obvious enough, but granted this interest, what are the relations which the State sustains to this wide reaching subject? What has it to do with the health or disease of the people that compose it? Is not the maintenance of health an individual interest and an individual duty? Health is forfeited by the wanton indulgence of appetites, by reckless exposure, by excessive labor. For all cases of this sort, the State may suffer loss, but, with them, it has no direct concern. But there is a large class of diseases to which we are exposed, of a very different character. The plagues and pestilences that travel round the world, the fevers that smite whole communities, the scourges that leave Rachels weeping in every home for the children that are not, all these transcend to a greater or less degree the bounds of individual action and responsibility.

The generations before us have charged all such visitations to a mysterious Providence. They have interpreted them as the frown of God upon an offending land or age, and they have sought to stay them by prayer and penance, by sacrifices and by fasting. But little by little it has come to be seen that these dreadful scourges are after all not miraculous in origin. All their phenomena, though sometimes hard to trace, fall within the category of cause and effect. We can follow them back to man's transgression of physical law, and not to Divine decree—to sins of ignorance or omission, it may be, and chargeable to communities rather than to individuals, but the evils are still physical rather than spiritual in their source.

What are the dangers against which the *State*, the collective body of the people, in contradistinction to the individuals that compose it, what are the dangers to the public health against which the *State* is called upon to protect itself?

We shall see them best in some concrete case.

The chief dangers are connected with and arise from the aggregation of men in cities and towns. Cain, the first murderer, is credited with building the first city.

Consider, for a moment, the changes that are wrought in the conditions that effect human health in the building and prolonged occupation of a town. Take, if you

please, a well selected and naturally healthful location. All city sites are not of this character. Many of them are located with sole reference to commercial advantage, as New Orleans, just lifted above the sea by Mississippi mud, or Chicago, stretching over the barren sands that bound the Lake, and obliged to count every fraction of an inch of elevation. In such cases, every problem is complicated, but we will consider here the best location that can be found for such a use. What is better than one of the rolling and diversified drift deposits of Central Ohio, for example, made up of beds of sand and gravel and clay, variously intermingled. Its surface is covered with trees or grass and its atmosphere is modified as to heat and moisture by the powerful agencies of vegetable growth. It has its natural drainage channels by which all surplus water is more or less promptly removed. Its uppermost beds, for 10 or 15 feet, are at least moderately porous, serving as an effective filter for the water that descends to the impervious bed below. When the level of this lower bed is reached in the sides of the ravines that intersect the plain, springs of clear and pure water break out, to satisfy the thirst of man and beast, or when wells are sunk through these porous beds, a supply of the same character is reached.

In short, the various conditions of soil, atmosphere, drainage and water supply may be in all respects favorable to human health while the tract lies in a state of nature or under the farmer's tillage.

But by some law of natural selection it is taken for the site of a town or city. How abrupt and all pervading the change that follows!

The surface is stripped of its forests and sod, and the ameliorating agencies of vegetable growth are lost to it. The natural drainage channels are abandoned because of their interference with the regularity of streets and boundaries. Outlying tracts are cut off from their natural waterways and require to be filled, to be brought to grade. What need is there of describing the average city *fill*? The scrapings and sweepings of the streets, ashes saturated with the products of household waste, the garbage from back alleys, the offal of stable yards, whatever has volume, whatever will occupy space, no matter from what source, is counted available in making the foundations upon which shall stand the buildings in which men are to live and work.

Into the porous beds that constitute the surface and through which the water of the wells and springs upon

which the population depends is filtered, shallow and uncemented privy pits are dug. A pit is soon filled and over its festering pollution, a slight cover of earth is thrown, while another is dug in the fresh ground adjacent. Kitchen drains pour their daily burdens also into the soil. As years go by, these varied receptacles of impurity constitute a considerable part of the unoccupied ground, but still the water descends through it to feed the wells and springs.

If the towns prospers, every foot of the central area is brought into demand. New streets are cut through the courts and yards of earlier occupation and this thoroughly polluted soil, like the made grounds, at which we have already glanced, is occupied for building-sites.

A building gets a part of its air from the ground on which it stands. In winter, especially, when doors and windows are kept closed, a powerful draught upon this ground air is established by chimneys and flues. The draught is honored, and up through uncemented cellar-floors and sidewise through uncemented cellar-walls, the pestilential current pours, bringing with it the conditions and the germs of various diseases.

The town that we have thus far followed has been left entirely to individual action, so far as the health of its people is concerned. Every man has done what seemed right in his own eyes, and this is the result:—a deeply polluted soil, an unclean and pestilential surface, an endangered water-supply. With these conditions, sickness is as sure to assail the town and lay its heavy tax upon it, as night follows day. When the germs of typhoid or diphtheria or cholera or yellow fever reach it, these scourges spread with explosive violence.

But the endangering of the health of a community is the arrest of its prosperity, and relief is forthwith sought from present and prospective evils. To what source shall the people look for relief? There is but one source adequate to the emergency. The *power of the State* must be invoked,—that is, the collective action of the people through their properly constituted authorities.

The reeking soil cannot be purified, it is true, but all further pollution of it can be prevented. A system must be established, for the safe removal of excretion and waste. In like manner, a safe and adequate water-supply must be introduced. The wells that reach the endangered sheet beneath the town must be closed. The pestilence-breeding surface must be cleansed. The vile sinks

of impurity within the ground must be disinfected. But for all this line of work, the authority of the State, the authority and the penalty of law, are demanded, and law only will suffice. In the 17th century, when the pestilence was drawing nigh a great city, a day of fasting and prayer was appointed. Clouds of incense rose from all the altars and holy water was sprinkled on the waiting multitudes. Priest and prelate, clothed in sackcloth and scattering ashes on their heads, would lead vast throngs of weeping suppliants around the city walls praying the Lord to spare his heritage. But the Lord did not hear. The pestilence advanced apace and smote the people and smote again, till it was weary. An answer to these prayers would have demanded a miracle —a miracle wrought in the interest of indolence and ignorance and filth. *Individual action* was all that was demanded in the 17th century, so far as public health was concerned.

In the 19th century, when a city fears an invasion of pestilence, it invests in chloride of lime and carbolic acid, instead of frankincense. Instead of sprinkling the unclean bodies of the people with holy water, it provides free baths for them, and it flushes its sewers. It, too, has its processions through the streets, but sanitary inspectors, clothed with the authority of the law, are at their head, and laborers, paid from the public purse, and furnished with hoes and shovels and garbage carts, fill up the ranks. They gather up and remove the dust and ashes which priest and prelate scattered, and when they have made their circuit, the city is able to draw a line and to say—even to the pestilence that has hitherto walked in darkness, most inscrutable as it has always seemed, of all the agents of destruction, "*thus far shalt thou come and here shall thy proud waves be stayed.*" In the 19th century, the *State* has begun to care for the health of its people.

The relation that the State bears to the public health is here coming into view. Of the three great factors of human health, viz., pure air, pure water and nutritious food, the first two can be guarded and maintained only by the general and organized action of the community, that is, by the power of the State, wherever, at least, men are gathered into cities or towns.

The assertion of its right to these functions on the part of the State, often has a history like that which I have roughly sketched, but there never was a time when

it did not possess this right. It is included, in fact, in the primal law of self-preservation. If it now has the power to rescue its half ruined soil from further and fatal pollution and to save the endangered fountains and streams on which it depends from being turned into specific poisons, why then it had the power in the beginning to protect the virgin soil from all base uses, and to keep its health-giving springs as clear and sweet as when they first came into its possession. What wisdom and economy there would have been in establishing and maintaining such action from the beginning of its course!

Let it not be thought that this claim on the part of society is a modern invention. It is as old as civilization. The laws of Moses are full of hygienic requirements. When Plato, the founder of Political Science, sketched, more than 2,000 years ago, the ideal state, he gave a great place in it to State medicine. Hippocrates, his friend and counsellor, himself the State physician of Athens, gives this wise advice to a young disciple, touching the field which he should select for his future practice:

"When you have selected the city that is to be your residence" he writes, "consider well its situation, how it lies to the winds and to the rising of the sun, consider also the waters which the inhabitants use, whether marshy and soft, or hard and running from rocky situations. Also the ground, whether naked and deficient in water, or wooded and well watered, also the mode in which the inhabitants live, whether they are fond of eating and drinking to excess, or are fond of exercise and labor. From these things you must proceed *to investigate everything else.* For if you know all these things well, you cannot miss knowing either the diseases peculiar to the place or the particular nature of common diseases, and you will thus be able to foretell what epidemic will attack the city, either in summer or winter."

Twenty centuries have passed since Hippocrates wrote these words, but the young physician of our own time might ponder them with profit, for in them is plainly contained, the great law of public hygiene,—that the diseases of a community are invariably connected with the conditions in which it lives. Ancient Rome was also wise in its day and *for* its day, in regard to sanitary law. A part of the drainage and waste of the present city is flowing through the *cloaca maxima,* the great

sewer that was built by King Tarquin, 500 years before Christ. The house of a well-to-do Roman in the best days of the imperial city was provided with sanitary appliances in the matter of drainage and ventilation, that show that he was living up to his best light.

To obtain a pure and abundant supply of water, the city counted no outlay too great. The stupendous aqueducts constructed for this purpose were among the wonders of ancient engineering. No city of modern times has ever approached imperial Rome in the number and equipment of its public baths.

In the later periods of the empire the care of the State for the health of the people was shown in the appointment of a certain number of physicians for every city, according to its population, who constituted in reality a board of health.

The Dark Ages that followed the downfall of the Roman Empire were darker in nothing than in their utter ignorance and neglect of the most obvious principles and laws that apply to the preservation of the public health.

For many centuries the cities of Europe reeked in incredible corruption. Plague and pestilence swept through them periodically, like fire through forest-leaves. Sometimes the cry would be raised in a city that the Jews had poisoned the wells, and a fresh occasion would be found for an assault upon the Jewish quarter. The wells *were* poisoned, it is true, but Gentile and Jew had alike been concerned in the work. They were poisoned by the products of human waste that found their way to them through the filth-laden soil.

It is only within the last century that Europe has begun to free itself from monkish superstition and medieval ignorance in regard to the visitations of disease and to learn the great lesson that "the curse, causeless, does not come."

It is only within the last century that the unfailing connection between tainted air and polluted water on the one side, and wide-spread sickness or the devouring pestilence on the other, has come to be clearly recognized and, to some extent, to be acted upon.

It is only within the last *quarter* of a century that a *science* of public health has been created. More has been done within this period to organize and systematize the various facts that bear on the health of communities, more practical work has been done to prevent and crush

out disease, than in all the previous centuries of Christendom.

Science has now reached such a point of development that she begins to answer our questions in regard to the causes of disease. With the balance, and with the spectroscope, and with the microscope's all-seeing eye at her command, and above all with the method of investigation that she has developed, she is giving us solid and substantial knowledge of many subjects in this field. One after another, we are tracking to their lairs, the great destroyers of men. We have already learned the history of some of them and against these, we are more or less thoroughly armed. We are on the "spoor," at last, of the most ruthless and treacherous of all, consumption.

Grander discoveries in this field, manifestly await us in the near future, but enough has already been done to change the character of much of our knowledge from empirical to rational—and to this complexion all will come at last.

It is to England that we must look for the most sagacious prevision, for the largest knowledge, and for the most resolute and successful enforcement of the laws of public health. For a thousand years, her population has been wasted by every pestilence that has swept over western Europe—but "the epidemic of cholera in 1832, in its practical teachings and ultimate results, proved the starting point of a great advance in hygienic reform. Its distinct and novel selections of certain peculiar localities as the best prepared and fittest for its ravages, its uniformly greater prevalence among the poor, the degraded and the filthy than among those classes where the comforts and the decencies of life were found, its very general avoidance of the latter until it had acquired an accumulated virulence and power by its malignant growth among the former, all united in demonstrating to the government the vital necessity of an immediate and thorough investigation into the causes and possible means of prevention of a pestilence so fatal to national prosperity and life. The right measures were promptly taken. Government commissioners were appointed, thorough investigations were made and the results, carefully and accurately tabulated, were given to the public. The very able and comprehensive report published in 1842 on the sanitary condition of the laboring population of Great Britain is universally acknowledged to be the true starting point of modern sanitary legislation."

The Public Health act of 1875, "condensing and amending the previous acts relating to the public health," is unquestionably the most complete hygienic legislation yet enacted in the world. Where shall we look for any more important act of legislation on any subject whatever, in ancient or modern times?"

And what results has England to show for her sanitary legislation and reform? Even here, let it be remembered, only a beginning has been made, but the answer is most assuring and satisfactory. Sentiment and guess work do not enter into it, but it is the clear and uncolored deduction from the best kept statistics of our day.

In the older cities, the sickness and death-rates have been reduced one-third. In the newer districts of the cities, that is in those districts that are reasonably free from the accumulated pollutions of the past, the death-rates are reduced to less than one-half of the previous rates, or to 10 in 1,000, and sickness has been reduced in like proportion. In well regulated institutions for children, in prisons and other places uuder effective sanitary control, the death-rates for the younger classes have been reduced to 3 in 1,000, or less by two-thirds than the rates in the general population, and perfect immunity is secured against all ordinary epidemics of typhus, diphtheria, dysentery and the like.

Consider what these figures mean. The diminution of a death-rate by a third, a half, or by two-thirds, is as if every third year or every other year or every two years out of three, should be turned into a jubilee, exempt from disease and death.

The experience of England in hygienic reform, short though it be, is conclusive. The evils that man suffers most largely from are remediable evils. The diseases to which he succumbs or by which he is enfeebled or impoverished, are largely preventable diseases. Sagacious observers have long seen this, but the demonstration has been made for the first, in our own day.

Dr. Benjamin Rush, one of the great lights of American medicine, said three-fourths of a century ago: "The means of preventing pestilential fevers is as much under the power of human reason and industry, as the means of preventing the evils of lightning or common fire. I am so satisfied of the truth of this opinion, that I look for the time when our courts of law shall punish cities and villages for permitting any of the sources of bilious and malignant fevers to exist within their jurisdiction."

If Dr. Rush could utter words like these 75 years ago, what would he say now in regard to the same line of subjects, under the far clearer light and the abundant demonstrations of our own time?

It is not going too far to assert that the State is responsible for the health of its people. It is chargeable with ignorance or negligence or with both, when it allows a death-rate of over 15 in 1,000 to prevail, or when typhoid or diphtheria are suffered to run rampant and waste its most precious life.

We have it largely in our power to defend ourselves from these scourges, and the ability creates an obligation than which none can be more weighty or imperious. We do not rest until our homes are measureably protected against fire and flood. Why suffer fevers to waste them and pestilence to sweep away their rising promise? In the light of modern knowledge, of experimental demonstration, it is an easier task to protect a city from wide-spread disease than from floods or flames.

Within the last few months, the Mississippi has overflowed its banks, and in so doing has inflicted great suffering and loss upon a large population. How to guard against the recurrence of such an overflow is a problem over which the hydraulic engineer stands silent and discomfited, even though he has the resources of a nation on which to draw.

Two years ago, this same valley was invaded, not now by floods from the north, but by a fierce fever, the fires of which were kindled in torrid swamps. The advancing pestilence found thriving commercial centers powerless to resist its ravages. In all of their hygienic conditions these cities of the great valley were as rude and vile as the cities of Europe in the Dark Ages, and the fever burned and destroyed within them as it did in the days of old. But the saitary engineer is summoned to relieve them, and in a few months he has disinfected and drained Memphis so thoroughly that it can never again be so visited.

It is vastly easier, I repeat, for the sanitary engineer to exclude yellow fever or cholera from the great valley than for the hydraulic engineer to confine the Father of Waters within his proper metes and bounds.

But I turn briefly to inquire what the relations are which *our commonwealth* sustains to the health of its citizens. I answer:

1st The right of the State to assume control over the

several factors of the public health is everywhere conceded. No question is raised as to the full power of a community to guard its citizens in all necessary ways by sanitary legislation. It can shut out diseases by quarantine, or it can stamp them out by summary methods. It can bring in good water, and it can seal up dangerous wells. It can open sewers and can forbid the further pollution of its soil by making it the receptacle of excrementitious waste. All this and more is settled by common consent, and a great vantage ground is found in these facts. There are no stubborn, prescriptive rights that are able to block the way of sanitary reform. The battles have been already fought and the ground is clear.

2d A large amount of sanitary work is going forward on all sides. Our cities and villages are moving energetically in the interest of the public health. The most generous expenditures are ordered. Our people, as a rule, are not only willing, but are even anxious to make all needful outlays to secure good water, good drainage and good air. The rapid growth of interest and intelligence on all these subjects is most hopeful and encouraging.

3d The results obtained in the way of sanitary protection are entirely disproportionate to the outlays made. Much of our work is crude, empirical, extravagant, inefficient. Some of it even aggravates the evils that it undertakes to cure. The whole system under which it is carried forward in many of our communities is radically wrong and calls loudly for immediate reform. *System*, I have said, but it is rather, *want of system*, from which we suffer.

You all know the methods under which the work is done. A city wakes suddenly to the fact that its conditions have become unhealthful. It may even be found that whoever sojourns in it, though but temporarily, whoever breathes its air, and drinks its water, does so at some risk of life and health.

Such a state of things lays the ax at the root of its business prosperity, which is the main ground of its existence, and immediate action must therefore be taken. The only agency with which it is provided, as a rule, for the undertaking of work of this character, is the City Council, the seat of municipal power, and the City Council is forthwith resolved into a board of Sanitary Engineers. When we consider the character and complexity of the problems to be attacked, and the magnitude of the interests involved, covering as they do the health and

prosperity of the city for generations to come, how the wrong intake of water-supply or the wrong outfall of sewage, for example, may determine whether thousands and tens of thousands of human beings shall live their allotted length of days or die miserably before their time, when we consider these things and the qualifications that an average City Council has for dealing with them, I think that as we glance at our new-made sanitary engineers, we may be pardoned for exclaiming, "God save the mark!"

Let alone the utter want of knowledge of these subjects, and the utter want of training in regard to such questions, by which many members of a council will ordinarily be characterized, let alone the danger that political and real estate interests will become improperly mixed with sanitary demands and sanitary work, the shortness of individual tenure of office is, in itself, a fatal disqualification for the control of interests like these. This fact alone forbids, or, at least, militates against the unity and persistency of plans which are altogether essential to success. It is to causes like these that the anomalies, the extravagance, the inefficiency of much of our work, done in the interest of the public health, are to be ascribed.

I have heard of a trunk sewer in a principal street in a great city that, like a gorged serpent, is larger in the middle than at either end. I have heard of long lines of underground work that have been left unused and that have been forgotten. I have known of many sewers, several times too large for any possible demand upon them, along whose rough and obstructed walls the small streams of sewage meander slowly, with ample time for destructive decomposition before they reach their outfall. I found two thriving towns of our commonwealth, in the year of our Lord 1881, building sewers and connecting privy vaults with them before a water supply was secured or even definitely thought of.

"The umbrageous oak, with pomp outspread,
"Full oft when storms the welkin rend,
"Draws lightning down upon the head
"It promised to defend."

In a month like the last, with ten inches of rainfall, such a town will do very well with its new sewers, but what will happen when a mid-summer drought is scorching the land? Such a sewer, built in the name of the public health, must prove many times more dangerous

to it than the grossest forms of soil defilement which it seeks to replace.

I repeat, the manner in which we are doing much of our sanitary work is far below the best knowledge of our time and is a serious reproach upon our civilization. We are expending enough and more than enough to give us ample protection from the diseases which threaten us, but our ill-devised plans, and our worse constructed work, leave us still, to a large degree, within their power.

With a few suggestions as to the direction in which to look for relief, I will close my address.

1. All local sanitary work should be placed in the hands of, or at least under the control of, Municipal Boards of Health, which should be measurably permanent bodies, and which should be entrusted with large powers. Their plans in regard to work to be undertaken should be deliberately made, should cover the whole field, prospectively at least, and should be submitted to the most competent criticism before final adoption. These plans must involve an accurate knowledge of the topography and geology of the district to be dealt with, as these two lines of facts determine to a large degree the problems of drainage and water supply. In other words, these plans would require a *sanitary survey by men trained for such work.* There is not a city in the State that would not even at this late day, after all the great outlays it has made in matters pertaining to the public health, be abundantly repaid by such a survey. It would reveal mistakes in the past involving the useless, or worse than useless, expenditure of large amounts of money, but it would forewarn and forearm against similar mistakes in the future, and under the system that we are pursuing, they are always imminent.

Plans formed in such a way, even if not the wisest possible, could not be essentially inefficient, or vicious. They would have the great merit of unity, consistency and true economy.

The functions of these local boards should certainly include the instruction and education of the people in hygienic matters. There never was so teachable a people as our own. The respect for science is wide-spread among them and our public education has made a large body in every community sufficiently acquainted with the elements of science to receive with profit its practical applications in matters of life and health. Tracts treating of these subjects, issued by such boards, would be eagerly read and discussed, and would certainly prove very influential in correcting evils and advancing reforms.

2. In the next place, the relations of our commonwealth to the health of its citizens demands for its proper expression the *establishment of a State Board of Health.*

No matter how wisely the municipal boards are organized or how efficient their work, there is a large and vitally important field which they can never cover. To gather up the results of the various local boards, to collate and compare them and thus to make them profitable for example or for warning, is obviously a very important part of the work of public hygiene, but the board of no city or town would feel called upon to undertake it. It must be done by a central, State organization, or left undone altogether. So also the *general legislation relating to the exclusion of epidemic diseases*, whether of man or of the domestic animals, must fall to a State Board. Such a body would be the only one capable of dealing properly with the important subject of the *pollution of rivers.* No city thinks of those that live below it. So its own sewage is discharged at a safe remove from the source of its water-supply, its demands upon the river are met. Practically, the doctrine is "the devil take the lowermost." Coleridge's lines apply to our conditions.

> "The river Rhine as is well known,
> "Washes the city of Cologne—
> "But Oh ye Gods, and powers divine,
> "What then shall wash the river Rhine?"

So far as is now apparent, the State of Ohio, through most of its area at least, must depend for the future, as it does in the present, upon its rivers and lakes, for its water supply. Its geological structure and composition seem to forbid the existence of any large stock of potable and well protected water beneath the surface. It has no formation like the English chalk, which can serve as a reservoir of thoroughly filtered and purified water, upon which it may draw for ages, and therefore the necessity for guarding its lakes and rivers, becomes a question of the gravest importance, and a State Board of Health, or its equivalent, is the only organization fitted to deal with it.

I may remark in passing that we are not shut up to the absolute necessity of turning our rivers into sewers. There are other possible means of disposing of household and manufacturing waste. The problems connected with this whole subject are fraught with national interest and importance, for the poisoning of our rivers is the impoverishment and final exhaustion of our soil.

The last duty which I would refer to a State Board of Health is second to none that has been named in real

value. Such a board must inaugurate and maintain a *thorough system of sanitary statistics.*

Accurate statistics are altogether essential to a *science* of public health. It is upon the wise use of such figures that the most valuable conclusions of sanitary science have been established.

Of three items, at least, in the history of every individual, the State should make record—birth, marriage and death. It is surprising to find how much such facts can be made to tell. The death-rate of a community, in particular, indicates with unerring accuracy its sanitary condition. The distribution of this death-rate among the various forms of disease points out with like certainty some of the special dangers that assail the community. Is it consumption that is wasting it! Look out for a high level of ground water. Is it diarrheal disease? "There is then a practical certainty that the population is either breathing or drinking a large amount of putrefying animal matter."

By the death-rate, all sanitary reforms must be tested. They will stand the test. Lower the ground water; replace sewage soaked wells with an arterial supply from pure sources; let sewers relieve the overburdened ground of the products of waste; empty and disinfect the reeking vaults; cleanse the garbage-strewn alleys, and the death-rate will respond as promptly as the mercury in the barometer tube to the changing weight of the atmosphere.

I regret that our own commonwealth has not yet realized its need of the counsel and service of a State Board of Health. I find it hard to account for the failure. Our legislators are not devoid of sensibility and thoughtful care for the creation. They have enacted a hawk law in the interests of young chickens, and turkeys, and sparrows. This is well, but would it not have been an equally worthy object to protect the nurselings of our homes from the destruction that wastes them at noonday? They are of more value than many sparrows.

The Legislature has established a dog tax. The farmer may now sleep in peace, forgetful of his flocks that are wandering on the hills. If the dogs attack and destroy them in the darkness of the night, the State will make good their loss to him. But pestilence, too, walks abroad in the darkness, and "there is no home, how well so e'er defended, but has one vacant chair." Is not a man better than a sheep?

The law extends its care even to our rivers, that is.

to protect the fishes in them against drag-nets. If it had gone a step further and had protected the fishes from extermination through the sewage defilement which our cities pour into the rivers, it would have in so doing protected *us* as well from the drag-net of typhoid and malaria.

Perhaps when the birds of the air, the beasts of the field and the fishes of the sea are all duly protected, our legislators will turn their thought to the protection of human life and health.

I trust that your influential body will take such action as will advance a consummation so much to be desired as the establishment of a State Board of Health.

3. In the third place and finally, Gentlemen of the Association, the State makes a new demand upon your profession for service in this new field. It is from your ranks that these boards of health to which we look for such beneficent results, may be chiefly drawn. Hygienic questions are so essentially medical in their character that the treatment of them can be safely entrusted to none but trained physicians. Two or three other professions, however, will always be called upon for service in the settlement of these hygienic questions, viz: law, and architecture or engineering, and therefore I believe that room should be found in all of our boards, both State and Municipal, for a lawyer and an architect or an engineer. But the laboring oar must be left to *you*.

I am sure that you will respond to this most honorable and important demand. There is a vein of chivalry in your profession. It has always held its gifts of healing in trust for the public good. It heeds the cry of suffering from the poor and lowly. It has no secrets—no patents. A discovery made by the most accomplished of your number cannot be retained by its author to enhance the value of his individual practice, but he must share it with even the humblest of his brethren. No pestilence-smitten city has ever made its appeal to you for aid without meeting with a quick response.

But busy as you are with the demands of an exacting practice, it is quite possible that many of you have failed to recognize in its true character that other and larger service that you can render to your respective communities in the work of the prevention of disease, but when these duties are laid upon you, you will not be found wanting.

Far down the future, I see a fair city rise. Its streets are not of gold, but they are free from all defilement.

Its foundatious are not of precious stones, but they are laid in well cemented masonry. It has no walls, great and high, but nothing that hurts or destroys is suffered to enter it. A river flows through it, but its waters are clear as crystal.

It is not the city of God; it is on *this* side of Jordan. It is the city of human possibilities, the city which men shall build at length, under the illumination of science and the inspiration of Christian love. In it your noble calling shall reach its crowning triumph, for the healing of disease will there largely have given place to the prevention of disease.

REPORT ON

OBSTETRICS.

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In attempting to fulfill the duty assigned me of presenting a report upon the progress of Obstetrics and Gynecology, for the past year, I shall select only a few topics for comment. To note in detail all the papers which have appeared in this department, would take too long, as well as conflict with the object of the appointment, which is to note progress rather than to reflect the whole work of the year, much of which is, as usual, vain and unnecessary. It is to be regretted that contributors to our periodical literature do not make themselves more conversant with what is already written, before rushing into print with their own views; but this is an evil under the sun which we must patiently endure, with little hope of amendment while such a multitude of journals have to be filled up with—something.

Progress in the medical sciences is of two kinds, actual and relative. The first consists in the discovery and promulgation of new facts, which help us to a better knowledge of disease and its treatment; the second consists in the gradual percolation of this knowledge through the various strata of the profession until information, which was at first confined to a few, becomes generally known and adopted. Thus the use of the speculum in gynecic practice, dating back many years, marks an im-

portant advance in our science, but its use by the profession in general is scarcely yet universal, and in that respect we are still relatively advancing. I make these statements because they contain some consolation. If the actual advance in the past year has been very slight, we may take comfort in believing that former advances have been more generally adopted. Of this we may be sure, that there is no standing still in science. If we are not going forward we are going backward, and if we reject truth we are bound to go in a wrong direction. As an example of the latter tendency may be cited the present divided state of mind in the profession upon the subject of *Anesthetics in Labor*. This is very well reflected in the discussion of Dr. Zinke's paper in the Cincinnati Obstetrical Society, reported in the *Obstetric Gazette* for July, 1881.

The discussion developed the fact that many physicians use anesthetics in a large proportion of their obstetric cases, the most eminent even in *80 per cent.* While some occupied more cautious ground, and some few entirely opposed the practice, the most important points bearing upon the subject were ignored, points which, if rightly apprehended and acted upon, would lead even those fortunate ones who never see any ill effects from anesthetics, to modify their practice.

In 1819 John Power called attention to the fact that the uterine contractions in labor were not normally painful, and that any great amount of pain experienced in labor was accompanied with a deficiency in the uterine energy. This fact is important, and more so than the explanation; whether we take the view of Power, that there is a metastasis of muscular contraction, or suppose that a deranged, ill-coordinating condition of the nervous system is responsible for the effect. The fact, I repeat, is important; that the pain of true uterine contraction is slight, and that when it seems severe it is because a pathological condition is present.

In 1836 Collins published his statistics of 16,654 deliveries in the Dublin Lying-in Hospital, which may fitly be taken as representative statistics, including even a larger proportion of difficult labors than are met with in ordinary practice. Of this large number *84 per cent* were delivered in *six hours or less*, of whom one quarter were primiparæ, and over *60 per cent.* were delivered in four hours or less.

We have then, two important facts: 1st, That labor is not specially painful, unless some pathological condition

is present; and 2d, That the duration of labor is normally very short. The opportunity being inappropriate for lengthened argument, I simply reassert these propositions as in entire harmony with my own observations.

What then, is the duty of the obstetrician in the presence of painful and prolonged labor? To smother the evidence of abnormal conditions; or to relieve or remove the latter by appropriate treatment? There can be but one answer, and the only rational advocacy of anesthetics in labor must be based upon their power to harmlessly relieve abnormal conditions, and not as a mere palliative of pain. That anesthetics have such power in some cases, I freely grant, but believing, also, that other means are more efficacious, I enter a protest against their indiscriminate use, or their use in any other capacity than as a therapeutic agency in eclampsia, version, or the like. To regard labor as a long scene of agonizing suffering, which needs to be treated as a capital operation in surgery, is certainly to advance backwards; to ignore the many means at our command for shortening and alleviating the process; and, in many cases, is simply to pander to the hyperesthetic and homeopathized prejudices of fashionable women in defiance of the better knowledge of the physician himself.

The further discussion and dissemination of methods long since propounded, but too little noticed, finds its most important example in the papers which have appeared during the year upon the *Method of Delivering the Placenta*, known as the method of Crede—among which is one from Crede himself, others from Weiss, Dohrn and Fehling. These, for the most part, contain further evidence as to the great value of the method, and also point out some of the reasons why it has not attained to universal countenance. Prominent among these is the fact that Crede, by his own admission, did not adequately state the method of procedure in his first paper. Indeed, he was but little more explicit than Blundell, whose statement is as follows: "When the placenta is retained in the uterus, independent of any very active manual operation, we may sometimes obtain its expulsion by merely laying the hand on the womb externally, feeling it through the abdominal coverings, grasping it and thus stimulating its fibres to contract, the placenta being expelled, or, to use a coarse but significant expression, this viscus being squeezed forth by the action of the hand." (Lectures 6, p. 318.) Certainly a great misap-

prehension of the method exists in this country. I frequently come in contact with two classes of physicians, those who claim to use the method and those who claim to have used it and abandoned it; but on close investigation I find that they never do, or did, really employ it, but only some vague manipulation which they suppose to be it. One great mistake is in thinking that the uterus is at once to be grasped after delivery, and the placenta expressed. Into this error I fell myself, and came very near dismissing the practice as chimerical.

As far as it can be stated in words, I should say that after the child is delivered and separated, a hand should be laid upon the abdomen and the womb stroked, rubbed, or kneaded, until a firm contraction is established. When this occurs, the womb usually is elevated and pushed forwards, and one or both hands may now grasp it through the abdominal wall, almost as well as if it were out of the body. The womb is then squeezed, not promiscuously, but with the intelligent design of grinding off and pushing out the flat, cake-like mass of the placenta. This may be felt to take place, and then a downward pressure is combined until the placenta is shot out of the vulva, sometimes with considerable force. Occasionally, owing to the imperfect contraction of the womb, the placenta is slow in being separated, and we must then intermit our efforts and try again after a few minutes. Occasionally, also, the placenta has been inverted during delivery of the child, owing to natural or relative shortening of the funis, and then the method will rarely succeed in expelling the placenta entirely, while even then it will render it more accessible to the fingers per vaginam.

A certain amount of tact and art is required to supplement any rules of procedure. The advantages of this method are conspicuous. The placenta is expelled sooner, to the satisfaction of both patient and physician. According to the statistics of Fehling, the duration of the third stage is as 7.7 minutes to 13.4 minutes, when left to nature. The loss of blood is less, according to Weiss, by about one-half. The uterus is thoroughly contracted, and post partum hemorrhage is unknown to the disciples of Crede. The uterine sinuses are thoroughly emptied, and thus a great cause of puerperal disease is removed, and child-bed mortality directly lessened. The practice obviates the necessity of introducing the hand into the uterus, and greatly diminishes the number of cases of adherent

placenta, hour-glass contraction, etc. In fact, according to Chantreil, these things are never witnessed when the practice is faithfully carried out. Advantages so great would surely be looked upon less apathetically by the American profession if this method was thoroughly understood, and the papers mentioned may therefore be regarded as most valuable agents of progress if they succeed in aiding the universal adoption of the method of Crede.

The subject of *Laceration of the Perineum* during labor is one which has received of late much attention, and bids fair to be placed in a brighter light than in the past. In the spring of last year I published a paper setting forth the desirability of delivering the head in the absence of uterine contraction, either with the forceps or by the Smellie-Ould method of extracting the head. With additional experience I am still more confident that when the head can be so extracted, the womb and woman being entirely passive, the perineum will surely be preserved, except in cases where there is an inherent defect in the structure. But I as freely admit that we cannot always secure the conditions of success, and therefore I welcome any further methods which promise success. Of these the only noteworthy one is that of Prof. Reamy. It consists in applying a single fold of towel against the perineum, the ends being gathered up in the hands of the physician, which are placed opposite each hip of the woman. In this way an additional layer of quasiperineal structure is provided, and we have the word of the inventor that he has never failed to save a perineum by its use. Theoretically the perineal body, which sometimes is ruptured while the skin is uninjured, is just as liable to accident as when this method is not used, and therefore large experience is necessary before deciding fully as to its merits. Important as this subject is, it is ludicrous to see how it (and many other subjects) is sometimes exaggerated. A few years ago the casual reader of obstetric literature might fairly have thought that at last, but in a more proper sense, the words of Mephistopheles to the student had become true:

> "Es ist ihr ewig weh und ach
> So tausendfach
> Aus einem Punkte zu curiren,"

and that the origin of all female woes could be traced to the laceration of the perineum; their cure to the surgical

repair of that structure. Scarcely was this ghost laid than another was conjured up, and a lacerated cervix was found to be the real culprit. In the last year some effectual exorcism has been directed to this phantom, not only by professed disbelievers, like the venerable Bennet, but by able advocates, such as C. C. Lee, and even its great originator, Dr. Emmet. There can be no question as to the great value of the operation when expertly performed in suitable cases, but it is a great relief to know from prime authority that one need no longer blush for shame because he is not in the daily habit of sewing up several lacerations before breakfast.

It is unfortunate that the practice of gynecology has been invaded to so great an extent by surgery. There is no reason why important cutting operations, such as ovariotomy and the removal of the uterus, should be taken from the surgeon. On the contrary, much harm has been done by building up a class of very specialized surgeons, the brilliancy of whose work has dazzled the younger members of the profession to such an extent that the more humble work of topical and general medication for uterine disease is sadly neglected. In my opinion there is little need for a special department of gynecology. It is true that from advantages of temperament and training some men will be more successful than others in the tedious treatment of uterine disease. But it should not altogether be divorced from general practice. The general practitioner who is not well informed in this department, cannot practice justly for a single day, since diseases of almost any kind occurring in women are very generally associated with pelvic derangements, either by way of cause or effect. And the pure specialist, ignorant of the latter class of conditions, is equally deficient. If surgery were left to the surgeon, I am confident that the spread of real knowledge as to the treatment of pelvic disorders would be more rapid and universal, and that the profession in general would be the gainer.

SURGERY

OF THE

ARTERIES.

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There can be little difference of opinion as to the broad distinction that theoretically separates the pathological results of arterial disease and wounds of arteries. In the one, a tumor due to arterial expansion results; in the other, a swelling caused by extravasation of blood is to be seen. In the former a sac, produced by the distended vascular tunics and compressed adjacent tissues, restrains the circulating fluid and keeps it within bounds; in the latter no sac is to be found, and the extravasated blood separates contiguous organs, dissects out important structures, and is only checked when neighboring parts are compressed by unyielding fascial envelopes. In the one case we have an enlarged blood vessel; in the other, a wounded or ruptured artery. The treatment that should be adopted in these different cases has been obscured by the name given them. By calling such widely unlike morbid anatomical states as an enlarged vascular trunk, due to arterial disease, and an extravasation of blood, caused by a ruptured or wounded artery, by the same term, "aneurism," an unnecessary and very distressing complication has arisen. Students are compelled to associate the therapeutical procedures necessary for the cure of an aneurism with the cause of the individual tumor, instead of connecting the pathological lesion present in a given case with the restorative provisions of Nature. Observation teaches that Nature resorts to one or more of a restricted

series of phenomena in her efforts to cure a tumor resulting from a distended artery; the deposition of layer after layer of fibrin in the aneurismal sac may obliterate the tumor; these layers may be so placed that the cavity is filled without obstructing the canal of the blood-vessel; a part of one of these layers may be so displaced as to close the outlet of the sac, the blood within the latter at once coagulating; or, finally, inflammation and suppuration may completely destroy the tumor. The first three of these four processes may cure; the last one is almost certain to kill. The great treasures of surgery have been unearthed by careful study and diligent imitation of Nature's processes. Thus, it has been discovered that these beneficial procedures of Nature differ in merit in the part of the body in which the aneurism is located, and can be accelerated or retarded by certain steps on the part of the surgeon. To aid in effecting a cure it is not necessary that the blood be stopped passing through the sac, although it is essential that the force of the circulation be diminished and the rapidity of the flow through the tumor reduced.

It is unnecessary for me to review the different measures surgeons have resorted to for the purpose of reducing the rapidity and force of the circulation; rest, position, pressure, compression, electro-puncture, the "old operation," manipulation and ligation, or torsion, are among the more important. In all these, in order that a cure may be effected, it is necessary that a sac be in existence in which the blood may coagulate; or upon the walls of which layers of fibrin may be deposited, and that in those instances in which the main artery is occluded, a collateral circulation be established. Many cases can now be cured by the milder agencies, reserving for those that resist the more radical procedures—ligation, torsion, or the "old operation." Surgical history has no brighter page than that which records the contributions of Anel, Hunter, Brasdor, Wardrop and Syme to the surgery of arteries. Anel ligated on the cardiac side of the tumor, near the sac; Hunter tied higher up, where the artery was healthy; Brasdor went to the distal side of the tumor, ligating near the aneurism; Wardrop tied on the same side as Brasdor, but placed his ligature nearer the periphery. Of these procedures Anel's has no advantage not shared by Hunter's while Hunter's possesses merits to which Anel's is a stranger. On the other hand, the Hunterian operation is free from dangers that beset the method

of Anel. The distal operations—although both operations of necessity—differ as decidedly as the foregoing. The operation of Wardrop, however, has a bright outlook, and the surgical authorities of the day are among its earnest advocates. To Syme we are indebted for a revival of the "old operation"—a procedure imitating the fourth and last method Nature occasionally adopts for the cure of aneurism. Inflammation and suppuration may destroy an aneurismal tumor—unfortunately at the same time killing the patient by hemorrhage. Syme opened boldly certain aneurisms, turned out the clots, and tied the artery just at, but above and below the tumor. His success emboldened him to urge this method as one free from the great mortality of the Hunterian operation, and therefore especially valuable in iliac, axillary, gluteal and femoral aneurisms.

Before glancing at the state of a ruptured or a wounded artery, and reviewing the phenomena that assimilate it to or distinguish it from an aneurism, it may be of interest to look at the changes which ensue when a ligature is placed upon one of the great arterial trunks. Essentially the same phenomena noted after severing the sympathetic nerve in the neck are to be seen; the dilatation of minute vessels and the speedy development of a collateral circulation are the features of greatest interest to the practical surgeon. Whether this result is brought about by destroying the vasomotor nerve supply, or not, is a minor question; it is a fact of observation that for some reason or other these vessels do open when the main trunk is ligated, and that in this way the all-important collateral circulation is established.

The principal surgical measure for the cure of aneurism is ligation or torsion. The great danger overshadowing all cases of ligation is secondary hemorrhage. Experience shows that the ligature itself contributes materially to this unfortunate result. Although the greater part of the wound may unite by first intention, still the ligature, that during the operation was soaked in blood, and for the forty-eight hours following, was impregnated with wound secretions, ultimately occupies a funnel-like opening through which pus is drained—an opening communicating with the air at one end and reaching to the compressed artery at the other. The result is that decomposition commences at the surface, passes down the ligature, and finally surrounds the ligated vessel with a ring of putrescent material. Again, the ligature, where it

compresses the artery—especially if the middle and internal coats are severed and retracted—destroys a certain portion of the external coat and necessitates a process of ulceration that in the end casts off this slough. There is, furthermore, in connection with these phenomena an interruption of nutrition not limited to the part directly grasped by the loop of the ligature, which exerts a material influence upon the reparative processes which seal the central and distal extremities of the artery. It is a fact of far-reaching significance, that the reparative process, which seals the distal end of a ligated artery, is much less perfect than that which closes the cardiac extremity. Whether this be due to disturbance of the nerve supply of the part, or that the blood in contact with the distal end has passed through the avenues making up the collateral circulation, and no longer possesses the peculiar tint and character of arterial blood, I am unable to say. Be the explanation what it may, the fact that the distal end of a ligated artery is less perfectly sealed than the cardiac extremity cannot be denied. When this fact is borne in mind, it will surprise no one to learn that secondary hemorrhage far more frequently comes from the distal end of a ligated artery than from its cardiac extremity, although all our preconceptions—such as arise from our knowledge of nearness to the circulatory center, the force of the heart and the degree of arterial pressure—prepare us for just the opposite statement.

A knife is forced into the body and an artery wounded; the arterial injury is slight, yet the secondary changes, congestion, infiltration and softening of the walls of the vessel, ultimately cause the latter to yield. A more decided injury is inflicted; arterial blood flows for a time, hemorrhage ceases and the wound in the skin heals. In both these cases a pulsating tumor may soon form, revealing the fact that a so-called "false aneurism" has developed at the point where the artery was wounded. Contusions may injure or strains rupture an artery. In fractures a spicula may puncture, in necrosis a fragment erode an important vessel. In gun-shot injuries an artery may be wounded, or in attempts at reducing dislocations a vessel may be torn. A "false aneurism" may follow any one of these lesions. Should it not invariably be denominated what it is—a wounded or ruptured artery, and no longer called what it is not—an aneurism? The last reason I shall adduce in favor of this change of name, or rather, this return to the proper name, is that the treat-

ment indicated in the one is contra-indicated in the other; the measures that cure aneurism are not those that should be adopted for the cure of wounds or ruptures of arteries.

Eliminating rest, position, pressure, compression, electro-puncture and manipulation, as agencies applicable to but few of the cases of true aneurism, we find that torsion or ligation, in some form or other, is the great remedy. As before stated, the Hunterian operation is the surgeon's choice; the distal operation may be a matter of necessity. The presence of a sac, in which the blood may be made to coagulate, or upon the walls of which layer after layer of fibrin can be deposited, is fully as essential to the cure of the patient as the temporary cessation of the circulation, or the ultimate establishment of a collateral blood-supply. How is it with a wounded or ruptured artery? Here the skin may be perforated and the artery punctured —hemorrhage at once ensuing. The steps to be taken by the surgeon are materially modified by the presence or absence of hemorrhage—the same lesion may require very different treatment before and after the flow of blood is checked. Again, a piece of necrosed bone may puncture an artery and cause extravasation of blood without a wound of the integument. The same condition occasionally results from strains rupturing arterial trunks, or fractured bones puncturing them.

If a wounded artery bleeds and can be easily ligated, it should invariably be tied or twisted. Slight hemorrhage from a deep artery should be treated by graduated compression over the wound—severe hemorrhage resisting pressure, by torsion or ligation above and below the bleeding point. So far there can be no doubt as to the rule that should guide the surgeon; but what course shall he pursue when blood has been extravasated and is constantly accumulating in the tissues? Or, what do when the tissues are filled with clots, although apparently no more blood is flowing?

There can be no difference of opinion as to the principle that should guide the operator in many cases. He may be forced to forego ligating both ends of a bleeding artery when the finding of these structures necessitates great violence to important organs. Thus, after rest, position, pressure, etc., fail to check hemorrhage from a wound in the hand or foot, the brachial or femoral artery is tied or twisted, and graduated pressure applied. We now find the altered circumstances under which the latter operates sufficient to effect a cure. It is however, in those ases where

First, a pulsating tumor forms about a ruptured vessel, or after the wound that injures the artery has healed upon the surface; *Second*, where blood has accumulated and still accumulates in the tissues about a wounded artery, external hemorrhage having ceased; *Third*, where an enormous amount of blood distends to the utmost the parts about a ruptured or punctured artery—that authorities are not in unison as to the best course to be pursued, and where a rule should be formulated for the guidance of the operator.

If rest, position, local pressure, and uniform compression do not cure the first; if the same measures fail to check the advance of the second and cause its gradual diminution in size; and if the third resists like treatment, the next step, I hold, should be the same in each. The surgeon should temporarily control the flow of blood through the part, cut open the swelling, turn out the clots, and if blood comes from the wounded artery—and in most cases, even if it does not—at once twist or tie the vessel above and below the point of wound or rupture. Contrast this method with the Hunterian operation; in the latter the collateral circulation has been partially formed during the slow growth of the aneurismal tumor, consequently the main vessel can be occluded with but little danger of gangrene; the sac of the aneurism is filled with clotted blood, the result of rapid coagulation of its contents, or its walls are strengthened by the deposition of layer after layer of fibrin; in either case the arterial pressure is no longer able to dilate the walls of the tumor and the sac speedily contracts. In wounded or ruptured arteries, the surgeon can never be sure, prior to an operation, that the bleeding may not come from a small branch instead of the main vessel; in the former case, closing the principal artery of the extremity would require the development of the collateral circulation in a part not prepared for such a step, thus incurring great risk of gangrene; in the latter it would obliterate the main vessel in two places and leave but little hope of saving the limb. By opening the swelling, or dilating the wound, not only is the true source of the hemorrhage reached and its flow checked, but the accumulated clots are removed and the compressed tissues relieved, while all danger of inflammation, suppuration or gangrene is obviated.

There are two forms of arterial lesion in which no time should be spent in tentative measures. I refer to cases

of fracture with puncture of an artery and hemorrhage from important arteries eroded by necrosed bone. It should be the rule for the surgeon at once to seek the injured artery and ligate it above and below the puncture, in fractures thus complicated; while, in cases of arterial hemorrhage caused by fragments of necrosed bone eroding the walls of a vessel, Markoe's precept to amputate at once in all cases where the lesion is located in a limb, cannot be improved upon. If amputation cannot be resorted to, the artery must be exposed, the dead bone extracted, and the vessel ligated above and below the bleeding point.

Secondary hemorrhage needs attention in this connection. In accordance with the principles referred to as regulating the control of arterial hemorrhage, it would, at first glance, seem that they require the surgeon to enlarge the opening through which the blood is flowing, or to cut down upon the bleeding vessel should there be no opening in the skin, and tie or twist both ends of the vessel above and below the bleeding point. But this is not really so. The proper course to pursue is first to determine the end of the artery that is open; if the blood is dark, the hemorrhage is from the distal end; if scarlet, from the cardiac extremity. In the former case pressure will suffice to control the bleeding; in the latter in order to prove efficacious, pressure must be preceded by an operation. What is this operation? It is not enlarging the wound to tie the bleeding point, because the changes that have attended the casting off of the ligature have unfitted the end of the vessel to withstand pressure; the cord would cut its way through the softened tissues so soon as tightened. Again, the occlusion of the main channel at the ligated point, having by this time established new channels for the blood, we have in secondary hemorrhage two of the circumstances that favor the Hunterian operation—a diseased condition of the vessel at the site of the lesion, and a free collateral circulation. It is good surgery, therefore, to occlude the vessel at some point between the heart and the source of hemorrhage, but at some distance from the latter. By so doing a very striking result is obtained: the arterial pressure that before forced blood from the part, despite rest, position, local pressure, or general compression, is now removed by this procedure, and, although the open central end of the vessel remains unsealed, still, as the only blood that reaches it must find its way into it

through the collateral circulation, any hemorrhage from it will present the appearance and have the characters of venous blood. In other words, while secondary hemorrhage from the distal end of an artery, the blood practically being venous, is controllable by pressure, it needs the Hunterian operation to effect the same change in the arterial blood flowing from the open central extremity. After this operation, however, the same measures that ordinarily control venous hemorrhage now suffice for the latter condition as well as the former.

In conclusion, I would summarize the matter in the following propositions:

1. Bleeding from an accessible artery should be checked by twisting or tying both ends of the vessel.

2. Moderate hemorrhage from one not readily reached, should be controlled by rest, position, local pressure, compression, etc.

3. Severe hemorrhage from an artery not controllable by pressure, etc., requires that the vessel be sought in the wound and both ends tied or twisted.

(*a*) An important exception is to be noted in some cases of wounds of the hands or feet: the danger of damaging important structures may lead the surgeon to tie or twist the brachial or femoral rather than seek the wounded branches of the palmar or plantar arches.

4. In fractures, complicated by wound or rupture of a large artery, the surgeon should at once cut into the swelling, turn out the clots, twist or ligate the central and peripheral ends of the arterial trunk.

5. In pulsating tumors, following wounds or injuries of arteries, should rest, position, local pressure or general compression fail to check their growth or diminish their size, an operation should be performed, the tumor opened, clots removed and the vessel tied or twisted above and below the lesion.

6. When a wound or injury of an artery has led to extravasation, no operation should be performed, so long as rest, position, pressure or compression can restrain further hemorrhage. (*a*) An exception to this rule is to be noted in cases where the amount of blood in the tissues is so great as to threaten their integrity by gangrene, or where, after checking further increase, the above measures fail to cause a diminution in the size of the tumor, despite the length of time they have been employed.

7. If the extravasation caused by arterial wound or injury cannot be held in check and further hemorrhage

prevented by position, rest, local pressure or general compression, the tumor should at once be cut open, the clots removed, and the vessel tied or twisted above and below the point of injury.

8. In secondary hemorrhage, if the blood be dark, the bleeding is due to the patency of the distal end of the tied or twisted artery and can be controlled by position and compression. If the blood be red in color, it is arterial in character and comes from the central end of the vessel: here, owing to the condition of the vessel at the bleeding point the Hunterian operation is indicated, and after the artery is tied in a healthy part high up, the position and compression before only palliative, now suffice to effect a cure.

REPORT ON

THE SURGICAL DISEASES

OF THE

GENITO-URINARY ORGANS.

By N. P. DANDRIDGE, M. D.,

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There has been so much activity in the department of genito-urinary surgery, that the limits of a report are far too contracted to even glance at all the work which has been done in the last few years. Time will therefore compel me to confine myself to but few of the subjects which have engaged the attention of the workers in this field.

The treatment of stone in the bladder has recently entered upon a new phase, and the new methods which have been introduced have decidedly added to the operative resources which we possessed for the treatment of this affection.

These new procedures although in minor details they must be considered still on trial, have been sufficiently tested already to enable us to estimate, to some extent at least, their permanent value.

The first subject to which I desire to call your attention is the modification of the old method of lithotrity which

was introduced by Dr. Bigelow, of Boston, and which now generally goes by his name. Before entering upon a description of the new method it may be well to consider the position of lithotrity and the relation it bore to the cutting operation at the time Bigelow's paper appeared. This is not difficult to do for Sir Henry Thompson, in the spring of 1878, presented to the Medico-Chirurgical Society of London, a paper containing a full resume of his experience in the treatment of stone, at that time amounting to five hundred cases, a larger number than had ever been reported by any one operator. As Thompson has been for years the great advocate for lithotrity, and has employed it in a larger proportion of calculus cases than any other surgeon living or dead, we may take his experience as fairly representing the best possible results attainable by the operation as then practised, and may accept his conclusions, if biased at all, as decidedly in favor of his favorite operation. The value of this paper is now all the greater as it is to Thompson that we now have to look for the largest recorded number of cases performed under the new or Bigelow method. We are therefore in a position from the experience of Thompson alone, to compare the old and the new operations performed under conditions which insure the highest acknowledged authority and the largest personal experience, and to estimate the value of the method itself without the disturbing factor which the varying skill of different operators always introduces when results are gathered from a variety of sources. Thompson's paper shows that out of five hundred cases, 422 were treated by lithotrity, and 78 by lithotomy, or in other words sixteen per cent. of the cases under his care were considered as unfit for crushing as then performed and were therefore submitted to the cutting operation. How his own practice in this respect compared with that of other operators is shown in his work on Lithotomy and Lithotrity. Thus out of 219 cases treated by Sir Wm. Ferguson 110 were submitted to lithotomy and 109 to lithotrity. Keith's experience gives 160 Lithotomies and 118 Lithotrities in a total of 278 cases, while the majority of surgeons have practiced lithotomy in the great majority of cases. It is apparent therefore that Thompson had adopted the crushing operation in a very much larger proportion of cases than any other operator. Of his 422 lithotrities 32 died, giving a mortality of 7½ per cent., a result certainly most satisfactory, when it is remembered that the aver-

age age of his patients was sixty years. His lithotomies yield a death rate of 37 per cent., or 29 deaths out of 78 cases. In the table giving the cause of death in the 32 fatal cases found in the book above referred to, six of the cases, it is stated by the author, should have been submitted to the cutting instead of the crushing operation. It is therefore apparent that Thompson himself is inclined to think that lithotrity had been pushed beyond the limits of safety, and this certainly was the general expression in the debate which followed at the time, and the general tenor of the comments which this discussion gave rise to in the medical press. Indeed, there seemed to be a wide-spread conviction that the range of lithotrity should be decidedly contracted. Thompson's cases give the largest personal experience and the best results ever obtained by lithotrity; it is fair, therefore, to take them as a criterion for the best results attainable by the operation as then practiced.

In the International Congress held in London, 1881, the same surgeon reported the results of treatment in 103 cases of stone which had passed under his care since he began the performance of Bigelow's operation. 91 of these were submitted to rapid lithotrity, one to the old fashioned method, and eleven were treated by some form of the cutting operation. In other words, Bigelow's operation enabled him to submit 90 per cent. of his cases to lithotrity while by the old operation only 84 per cent. were thus treated, and even then the operation had been more frequently performed than his ripened experience deemed prudent. During this time the older method had been practically abandoned, having been used but once. Looking at the results we find that out of the 91 cases submitted to Bigelow's operation, in only three was the operation followed by death. Since then he has reported ten extra cases without a single death. So that we have 101 cases with three deaths, and thus the mortality has fallen from 7½ per cent. for the old lithotrity to 3 per cent. for the new. It is hardly possible that this ratio can remain constant, for in one series we have 422 cases from which to calculate our average, and in the other 101. This last number, while not large enough to establish the relation of successful and unsuccessful cases, is certainly sufficient to indicate a permanent improvement in the results of the new procedure, especially when it is remembered that Thompson's reputation attracts to him a large number of unfa-

vorable cases. The results of his lithotomies have remained about the same,—37 per cent. of fatal cases in the old, and 36 per cent. in the new series. I have confined myself entirely to the statistics of Thompson, as by so doing we are able in a much more satisfactory manner to estimate the value of the method itself by comparing the results of cases whose surroundings are as nearly similar as possible, and to whose treatment the same skill and dexterity have been brought, so that the results are freed from the uncertain factor which the varying skill of different operators always introduces, when statistics are drawn from different sources. How very great the difference which skill and experience make in the results of this operation, is well shown by Keyes. He has collected 162 cases in which Bigelow's operation has been practiced. These he has divided into two classes, the first of which comprises 125 cases with a mortality of 4 per cent., embraces the results of operators who have published five or more cases, and whom he therefore considers as probably especially experienced in urethral surgery; and the second amounting to 37, with a mortality of 16 per cent. are taken from general surgeons who have each reported but one or few cases.

The essential difference between the old and the new lithotrity is well brought out in the remarks of Teevan at the Congress. He says: "Before the introduction of Bigelow's method there was a general consensus of opinion that the first sitting of lithotrity should be as short as possible, that the surgeon ought not to leave the lithotrite in the bladder for more than two minutes and that the debris ought to be left to nature to expel, unless she could not do so, and (2) that after a stone was found the surgeon was to introduce a lithotrite to ascertain its size in order to determine whether it was to be removed by a crushing operation. Under the old regime as little as possible was done at the first sitting for fear of setting up inflammation. In Bigelow's operation everything is done at the first and only sitting, however long it may have to be extended. Nothing is left for nature to expel, everything is done for her. It is a new operation, and it will prove an inestimable boon to mankind for it kills fewer patients and cures more of those it saves than the old. It has furthermore extended the field of lithotrity: under the old regime stones up to one inch in diameter only were crushed, but hard calculi up to treble that size can now be safely dealt with by the new method."

The above extract shows clearly and concisely the principles upon which the method of Bigelow is founded. The old form of lithotrity, in regard to which there was a wide-spread conviction that it had already been pressed beyond the limits of prudence and safety, limited itself to medium sized stones, and excluded the hard ones unless they were of very small size. It confined itself to such work as could be accomplished in sittings only a few minutes long, and repeated the partial crushing at intervals of a few days to a few weeks until the last fragment was finally disposed of.

The smallest stones only could be completely disposed of in the short time allowed for each crushing, so that operative procedures almost always extended over a period of days and often of weeks, and during this time more or less of the debris, and sharp broken fragments of stone remained in contact with the sensitive bladder.

The expulsion of the fragments was left to the efforts of nature, and attempts at removal were confined to the evacuation of the finest debris. In cases of enlarged prostate, where the bladder was dilated and incapable of making any expulsive efforts, the operation was not applicable, and when marked cystitis existed the cutting operation was recommended to ensure drainage and for fear of exciting increased inflammation in a bladder already diseased.

The new method prolongs the operation until the stone is completely crushed, and then by means of tubes of large size introduced through the urethra at once empties the bladder by a powerful sucking apparatus, recognizing as a fundamental principle that "long continued manipulation with polished instruments is less likely to prove injurious than the continued presence of rough fragments" of stone; though it must not, however, be overlooked that the new operation is a more violent proceeding than the old careful method, and that the long manipulation, and large size of the instruments used subject the patient to greater danger of injury to urethra and bladder at the time of the operation than the former more cautious procedure with instruments of smaller size. Thompson has already raised a warning voice against the unnecessary size of the lithotrites and evacuating tubes used by Bigelow, and states that a necessary condition of success is "that the instruments employed shall never be larger than the nature of the stone demands."

In regard to the limits in size of the stone which may

be successfully removed by the new method, further experience is necessary to establish it. Mr. Coulson has thus far reported the largest one removed—4 oz., 140 grains. The longest time occupied in any successful case is reported by Bigelow himself,—3¾ hours, and the youngest one is given by Van Buren,—19 years. Thus while it would certainly be premature to attempt to define the limits of the new operation, either in regard to the size or nature of the stone,—the age or condition of the patient, or the limit of the time to which the operation may be prolonged, sufficient has already been done to show conclusively that Bigelow's operation has added very essentially to the surgical resources in the treatment of stone, and that except in especial cases it will probably supersede the old fashioned lithotrity. There must, however, always remain a considerable portion of calculus cases which will be more safely dealt with by lithotomy than any form of the crushing operation, and we may recall the words of Thompson as still applicable, "that it is probably safer uniformly to practice lithotomy in every instance, if the surgeon does not arrive at an accurate diagnosis of the nature of the stone and select the operation in accordance with it."

Teevan has reported a combination of lithotomy and lithotrity (Bigelow), which promises advantages in certain cases. After crushing and evacuating a stone from a patient suffering from enlargement of the prostate, who had been obliged to evacuate the bladder by a catheter, he at once made an incision similar to that practiced in median lithotomy, and thus provided a direct outlet for the urine.

Among the novelties in lithotomy may be merely mentioned the supra-pubic operation by Lister, with antiseptic precautions and dressings (Brit. Med. Journal Mar. 12, 1881), and the same operation by Anger, of Paris, in which the thermo-cautery was used.

The second subject to which I shall ask your attention cannot claim the attraction which novelty always presents, but will I hope not prove without interest as it includes a class of cases always embarrassing to treat, and which, in their early stage at least, are often difficult to recognize with certainty.

The remainder of the report will be devoted to a consideration of those forms of acute abscess which are dependent upon an inflammation affecting the glandular apparatus which is found in connection with the urethra, upon the surface of which these glands all open by

means of their efferent ducts. The mucous membrane lining these ducts is continuous with the common mucous membrane of the urethra, and the most important and frequent factor in the production of the inflammation which leads to the formation of the abscesses, which we shall consider, is a continuous extension from a pre-existing urethritis. That this is not the only cause will be seen as we proceed.

This glandular apparatus contains, mentioning them in the order we shall follow in our description, the prostate and visiculæ seminales, the glands of Cowper, and the common urethral follicles. While I cannot pretend to offer much, if anything, which is new upon this subject, the contributions of recent writers, especially the French, have enabled us to study it in a much more complete and satisfactory manner than we were able to do from the scattered and incomplete descriptions before given, and what I shall have to offer will be drawn almost entirely from such sources.

Abscess of the prostate has long attracted the attention of surgical writers, and a more or less complete description of this affection is found in our general surgeries. It has recently been the subject of a monograph by Paul Segond, entitled Acute Abscess of the Prostate and Periprostatic Phlegmon, in which the subject is presented so fully, and yet so concisely that it offers a most important contribution to the study of this affection. This monograph is based upon the investigation of 115 cases, and in what follows I shall confine myself almost exclusively to a resume of this work.

The causes of prostatitis leading to abscess he divides into direct and indirect. The indirect include (1) prostatitis from the effect of cold and (2) metastatic prostatitis, which includes cases dependent upon purulent infection, small-pox and mumps. The direct causes include, 1st, those due to trauma, which embrace those causes which act from within, *i. e.* from the urethral surface,—under which come (*a*) contusions which include rough catheterization and violent injections,—(*b*) wounds due to catheterization, false passages, calculi, and surgical operations practiced on the deep urethra: 2d, causes acting from without, (*a*) contusions, blows, or falls on the perineum, under which he includes horseback exercise, (*b*) wounds,—fracture of pelvis, wounds of perineum, gun shot wounds and surgical operations. The second

division includes prostatitis dependent upon simple extension of an existing inflammation, (*a*) by continuity from gonorrhea, cystitis, and internal urethrotomy,—(*b*) by contiguity from hemorrhoids, stricture of rectum and fistula. The third division includes all irritations acting directly on the gland, or conditions which favor continued hyperemia of the organ. These include a great variety of causes such as cauterization, caustic injections, cantharides, balsams, bougies retained in the bladder, fatiguing marches, constipation, excessive purgation, hypertrophy of prostate, venery, masturbation, and nocturnal pollutions.

These causes are, however, efficient in very different degrees, many of them acting as exciting causes of inflammation only when the prostate is already damaged. Thus a fatiguing ride on horseback could hardly produce an abscess when the gland was healthy.

In estimating the effect of the various predisposing causes, the age was noted in 86 out of 115 cases. Of these 17 suffered with hypertrophy of the prostate,—their ages varying from 54 to 84,—and 69 had urethral discharges, their ages being from 19 to 54. Age probably therefore plays no direct role. The scrofulous, tubercular and rheumatic diatheses predispose from the disposition they manifest to prolong urethral discharges.

Among the exciting causes, cold may act either by general exposure associated with great bodily exhaustion, as from the effect of long marches, or by direct action, by sitting upon the cold damp ground. Metastatic abscess is occasionally found with purulent foci elsewhere, and in one case, cited from Gosselin, prostatitis was found associated with swelling of the testicle during an attack of mumps. This case did not suppurate.

As to the effect of contusions, blows or falls on the perineum have very rarely been followed by abscess of the prostate; much more frequently has this effect followed the contusion produced by a badly introduced sound, or forcible injection. Out of 98 cases, 17 were referred to such a cause.

Wounds of the urethra made in surgical operations or accidental, thus from over distension in the use of large sized instruments, play an important role. Here may be mentioned damage done in the use of the lithotrite. But most frequently the abscess is found to follow a gonorrhea, either with or without a coexisting stricture. Indeed the author says that out of 98 cases it was only

possible in five to affirm positively that a urethral discharge was absent. The severity of the gonorrhea does not seem to predispose to this complication, in fact the prostate generally is affected only after the acute symptoms have passed. In 86 cases gonorrhea was present in 46, stricture in 23, and hypertrophy in 17. Of the 46 cases with gonorrhea, the suppuration was produced by an evident exciting cause in 22, and in 24 without any apparent cause. In 23 strictures there was an exciting cause in 14, and with the 17 cases of hypertrophy, such a cause was mentioned in all but five, so that in the 86 cases in which pre-existing disease of urethra or gland was present suppuration of the prostate depended 48 times upon the intervention of some accidental cause, and in 40 appeared simply during the course of the pre-existing disease.

Cubebs, copaiba and cantharides have all been mentioned, but their effect is by no means established. Excesses in venery, masturbation and nocturnal pollutions on the other hand must be recognized as playing an active part in the production of these abscesses, probably from the condition of unnatural congestion of the prostate which they tend to maintain.

The pathological anatomy of abscess of the prostate is readily understood when the normal structure of the gland is remembered. "The prostate is composed of a small amount of fibrous connective tissue, and of a great quantity of unstriped muscular tissue. The first forms the outer capsule, and the thin septa passing inward and carrying the blood vessels; the second is arranged as a net work of septa and trabeculae surrounding the different parts of the gland tissue proper. This latter consists of ducts opening on the surface of the pars prostatica of the urethra, mostly at the basis of and near the colliculus seminalis; they branch into the smaller ductlets which pass into the gland alveoli. These latter are longer or shorter, wavy or convoluted, branched tubes terminating in saccular blind extremities; many of them are possessed of short laternal club-shaped branchlets; on the whole each duct and its corresponding section of gland tissue are comparable to a compound tubular gland." (Smith and Klein's Atlas of Histology.)

Inflammation of the prostate may therefore arise from the epithelial surface of follicles, or in the interstitial tissue, so that we distinguish a glandular or catarrhal, and an interstitial or phlegmonous prostatitis depending

upon its origin. Inflammation of the follicles may continue in a chronic form and is characterized by a catarrhal discharge which gives rise to the affection known as prostatorrhea; or it may extend to the peri-follicular tissue. It gives rise to abscess either by the occlusion of the ducts and accumulation of inflammatory products behind the obstruction, or in the tissue external to the follicles when the inflammatory action is sufficiently intense. Abscess may be single or multiple, and varies greatly in size, implicating a part or the whole gland, and giving rise to irregular shaped cavities with ragged walls. The lateral lobes are the most frequently affected, the abscess being near the capsule, or beneath the mucous membrane of the urethra. This membrane may remain intact, or it may present a single opening which may be large or small, or it may be perforated by a number of small openings. When the abscess is situated in the periphery of the gland the capsule is usually thickened; it may, however, be perforated by the extension of the abscess, and an opening into the rectum occur by ulceration, followed by complete evacuation of the abscess and rapid obliteration of its cavity, or an opening into the urethra may take place at the same time and give rise to a persistent urethro-rectal fistula. Instead however of the rectum being opened the periprostatic tissues may become involved, and the pus burrow behind the gland and open into the urethra in its membranous portion, or it may gain the ischio-rectal space and point externally, often by long and devious fistulous tracts. In other cases an immense abscess may form in the retro-prostatic chamber, the cavity of which will be limited above by the thickened subperitoneal tissues, behind by the rectum; below by the deep layer of the triangular ligament, and on the sides by the lateral prostatic ligaments and in front by the prostato-peritoneal aponeurosis. The extension of the prostatitis to the periprostatic tissues may occur by simple diffusion, or coincident implication of these tissues in the inflammatory action, or it may be due to the rupture of an abscess, or to a phlebitis or lymphangitis, the venous and lymphatic plexus about the gland being very rich.

The various forms of chronic abscess found in the prostate need not detain us. Thompson classifies them as (1) those following acute abscess, (2) those which are chronic from the first, (3) tubercular, (4) calculous.

Symptoms. Troubles of micturition are the most prominent and characteristic of the symptoms of prostatitis, and usually result in more or less complete retention. The onset of the symptoms is generally very acute, and the formation of pus soon follows with the occurrence of retention, to be followed by a rapid subsidence of the alarming conditions as soon as the abscess is opened either spontaneously or by surgical intervention. Other cases, however, follow a more insidious course. This is more frequent when there is old standing disease of the urinary organs. In these cases the symptoms may point apparently to a nephritic trouble rather than to the prostate.

In the acute form the onset is marked by chills, fever, headache, thirst, and great constitutional disturbance, with pain on micturition, soon to be followed by retention. The temperature rises rapidly several degrees and maintains this elevation without intermission until rupture of the abscess produces a rapid fall. If, however, the opening does not readily drain it, the defervescence may be gradual. The urethral discharge generally ceases only to reappear later. The urine is passed drop by drop—retention may occur at once or only later. Erections and bloody seminal discharges are said to occur. When they are present they probably indicate that the vesiculae seminales have become involved.

The rectal symptoms are pain on defecation, tenesmus, constipation, and the sensation of a foreign body in the rectum which gives rise to fruitless efforts at expulsion. By the touch the gland is found enlarged, resistant, and painful,—the boundaries, however, can be easily defined so long as the affection is intra-prostatic.

When there exists a peri-prostatitis there is a diffuse swelling with a boggy feel. Resolution may occur in six or eight days with disappearance of all the symptoms, or an abscess form and open as above described. Out of 115 cases the abscess opened into the urethra alone in 35—28 times spontaneously, and in seven was ruptured by the introduction of the catheter. This rupture may occur by accident, or may be produced intentionally. The opening into the urethra is followed by the escape of pus from the meatus,—this flow is intermittent owing to the sphincteric action of the muscles about the membranous portion.

The cavity may now contract and a cure follow, or the flow may be obstructed, and the abscess fill again and again. When the abscess is large death may follow from

purulent infection, or a urinary fistula may result from a subsequent opening into the rectum or perineum.

In 43 cases the rectum was opened, in 18 only, however, of these was it opened alone; in 21 there being coincident opening into the urethra. The rectum is a relatively favorable mode of opening and should be favored by early incisions when fluctuation can be felt. The usual points from which the pus escapes are, the rectum 43, the urethra 64, perineum 15, and the ischio-rectal space 8, and the more unusual points of opening are the inguinal region 5, obturator foramen 2, umbilicus, thigh, border of rib, peritoneum and perivesical space each one. As to the ultimate result in these cases, the fistulous tracts tend to run a chronic course, and may heal only after months of suppuration. In some cases the prostate is occupied by an immense cavity which forms a sort of supernumerary bladder, the walls of which may be encrusted with a phosphatic deposit and from which fistulous tracts may radiate in various directions. Instead however of pursuing the course sketched above, the formation of pus may be the signal for all the symptoms of purulent infection. This is more apt to be the case when it is diffused in the periprostatic tissue. Purulent infection is the cause of a large portion of the deaths and is always to be feared. In some cases gangrene is said to have occurred. The results in 115 cases are thus stated: 70 cures, 34 deaths; 10 cases followed by fistula, and one not noted. In the 34 deaths purulent infection is noted 9 times, prolonged suppuration 4, and peritonitis and pyelo-nephritis, each three.

The diagnosis of this affection need not detain us except to urge the necessity of rectal exploration, without which certainty can scarcely be obtained. This exploration to be effective should be bimanual, the free hand being placed above the pubes so as to bring the organ more easily within reach. The same object may at times be better obtained by the catheter in the urethra It must be remembered that a small abscess beneath the mucous membrane of the urethra may escape detection by the rectal touch. The affections from which it is to be distinguished are cystitis of the neck, acute or inflamed stricture, and inflammation of the glands of Cowper and vesiculae seminales. From simple periprostatic suppuration it is scarcely possible to distinguish it with certainty.

The treatment must address itself in the early stages to allaying the inflammation and to relieving the retention should it occur. For the first, absolute rest, opium hypo-

dermically or by suppository and the application of leeches to the perineum, or the introduction of bits of ice into the rectum. In other cases warm poultices give great relief. These means failing an early and free incision should be practiced without waiting for fluctuation. It may be made from the rectum if the swelling can be prominently felt in that direction, otherwise it should be carried boldly through the perineum where the greatest swelling and resistance is found, and should extend into the ischio-rectal space so as to prevent burrowing of the pus in the tissues of the fossa. This is better than the incision in the median line. Failing to make this lateral incision in one case, left on my hands a process of suppuration which has now lasted for months and still continues. Another mode of opening the abscess may be mentioned and that is by the point of a catheter introduced into the urethra. This sometimes occurs accidentally as was once the case in my experience, a drachm of pus escaped and the symptoms of retention which had been present soon disappeared. It however may be done intentionally, a finger in the rectum making counter-pressure, and assisting in guiding the catheter. Time will not permit me to discuss the complications which may arise, or the various modes of treatment for the fistulous tracts which are left. The beneficial effect of active interference in these cases is well shown by the following considerations: In 71 cases in which there was no treatment, 36 recovered entirely, 6 partially, and 29 died, while in 43 treated there were 33 complete cures, 5 who were benefitted and 5 deaths. In 35 cases in which the opening was into the urethra there were 25 survivors and 10 deaths, of which 3 were by purulent infection, 2 by pyelonephritis and one by peritonitis.

In 43 cases with rectal opening, in 13 an incision gave vent to the pus giving two deaths (one by peritonitis by perforation and one by purulent infection), and 11 recoveries, while in 30 in which the abscess opened spontaneously there were 20 recoveries and 5 deaths, and 5 in which a fistula followed.

15 cases opened by the perineum,—in 10 an incision was practiced followed by 1 death, 3 fistulas, and 6 complete recoveries, and 5 in which the opening was spontaneous there were two recoveries and 3 fistulas.

In the one death due to purulent infection which was said to follow incision, the abscess was simply punctured and not incised.

The glands of Cowper, or the bulbo-urethral glands, are situated in the angle between the bulb and the membranous portion of the urethra. "Each gland resembles in structure the sublingual gland, being a large compound tubular mucous gland. The chief duct possesses a thick coat rich in longitudinal bundles of unstriped muscle," and "runs forward with its fellow for about an inch or an inch and a half beneath the mucous membrane, and the two terminate in the floor of the bulbous part of the urethra by two minute orifices." (Quain.) Inflammation of these glands is generally if not always associated with an existing urethral discharge, and appears in an acute and a chronic form. In the acute form the inflammation does not appear until the urethral affection has existed for some time and passed its acute stage, and this may be due to catheterization, or imprudence in the way of violent exercise. Often, however, it seems to arise without any especial exciting cause. The best account of this affection is found in Jullien's recent book on venereal affections.

The early symptoms are a feeling of fullness and uneasiness in the perineum, which is aggravated in the erect position, or on movement, and possibly at the time of the evacuation of the bowels. The recumbent position lessens the feeling of discomfort. A swelling can be felt at the junction of the scrotum with the perineum, circumscribed, and often not larger than a large pea. The pain increases especially on movement, micturition is difficult and painful, and retention may occur from swelling of the mucous membrane of the urethra, though this has been denied by some authors. The periglandular tissues become involved, the perineum swollen and the skin reddened. Torpidity of the bowels generally exists, though the sensation of a foreign body in the rectum gives rise to fruitless efforts at expulsion. Finally, an indistinct sensation of fluctuation may be perceived, not however until the tissues of the ischio-rectal fossa have been more or less extensively invaded, and the abscess finally opens in the perineum, if this has not been sooner effected by the surgeon's knife. This is the course when the periglandular tissue becomes affected, a result which is the more likely to follow as the gland has no proper capsule. The abscess may however open into the urethra and give rise to a chronic, persistent discharge, or may result in a urinary abscess with extensive infiltration or the formation of a fistula.

Inflammation of the glands of Cowper is a rare affection compared with the frequency with which the corresponding structures in the female, the vulvo-vaginal glands, become involved in the course of gonorrhea. The implication of these glands is the most frequent cause of abscess of the vulva.

A well marked example of abscess of the glands of Cowper has recently come under my observation in an adult who was suffering with his first attack of gonorrhea. The disease had already passed its acute stage, although a considerable discharge still existed. Owing to imprudence the bowels had become obstinately constipated, and it was necessary to use large and repeated doses of cathartics which finally acted excessively. The urethritis increased and retention came on, with some fever, dry tongue, and considerable pain over the region of the bladder. This was his condition when I first saw him. A Nelaton's catheter, introduced without difficulty but causing a good deal of pain, drew off nearly a pint of stale urine. The next day it was necessary to again use the catheter, after which the urine was passed in small quantities and with a good deal of pain. Decided relief of the general symptoms followed. In two or three days however, a sense of uneasiness in the perineum was complained of and obliged the patient to keep the recumbent position. The pain increased, and a circumscribed induration could be felt in the left side of the perineum, in its arterior portion; the swelling increased and the patient suffered with frequent straining efforts to evacuate the bowels, which were fruitless. The symptoms seemed to point to a prostatic abscess, ether was given for the purpose of exploration and opening it by an incision from the rectum if it was found to present in that direction. To my surprise the prostate was found quite normal, and the rectal touch located the swelling so indistinctly that it was thought best to defer the operation. The symptoms continued and became intensified, and in about ten days a distinct and deep seated fluctuation could be discovered. The whole left side of the perineum was now involved, and the skin reddened. An incision gave vent to nearly two ounces of pus. The incision was extended until it equalled in extent the line of a lateral lithotomy. The discharge from this was free and in a few weeks the patient was up, the wound having healed without the occurrence of fistula which I apprehended.

In all of these cases a free incision through the peri-

neum is undoubtedly the safest course. In the case I have cited several days of suffering might have been avoided by an earlier opening. When these cases run a chronic course the symptoms are all entirely different, as the following case will show.

J. D. presented himself to ask advice about a swelling in the perineum which had existed for some days and which seemed to be getting larger. It was quite painless. On examination two small swellings were found, one on either side of the raphe, the one on the right being situated somewhat anterior to the left. The integument over them was somewhat reddened and slightly swollen. The ischio-rectal fossa, and posterior portion of the perineum were unaffected. There was no difficulty or pain on micturition. The swelling had come on gradually and without apparent cause. The patient had had gonorrhea several times. A sound detected a stricture of large calibre in the bulbous portion. The treatment consisted in the passage of sounds at intervals of several days and painting the swellings in the perineum with iodine. After an absence of some days he returned, the swelling on the left side had opened and discharged a thin watery pus. A probe introduced showed the integument was undermined. This was freely opened on a director, and the patient kept in bed. The process of healing was slow and it was several months before the patient was out. The swelling on the right side opened spontaneously but healed very readily. These two cases are good examples of the chronic and acute forms of abscess of the glands of Cowper.

The mucous membrane of the urethra possesses "beside the lacunae of Morgagni small simple mucous gland tubes lined with columnar epithelium, and longer branched mucous gland tubes, the glands of Littre."

The form of abscess dependent upon inflammation of the follicles of the urethral mucous membrane, was first thoroughly described by Hardy in a memoir entitled, Gonorrheal Abscess, (abscess blennorrhagiques) which appeared in 1864. Subseqent authors have generally simply followed his description, so that the account of this affection which is now found in most of the recent works on diseases of the urethra contains little if anything more than the original.

These glands not unfrequently become involved in the course of an acute urethritis, and the persistence of the inflammation accounts, in many cases, for the continuance of the urethral discharge in its chronic form. So long as

their ducts remain patent the secretion of the glands readily escapes into the urethra, but owing to their minute calibre the natural outlet is readily blocked by the inflammatory products, and a minute abscess results. Such an abscess may form anywhere along the course of the urethra, and is not infrequently found protruding just by the side of the raphe. Their course is generally chronic, and they do not present any acute symptoms even from the beginning. They are first perceived as a minute swelling along the course of the urethra and always on the under surface. As they increase in size they may assume the appearance of a pedunculated body, generally not larger than a small nut, the pedicle being formed by the obliterated duct. The tissues about them are not involved, and the skin over them is perfectly healthy, not even reddened. In this condition they may remain for an indefinite time, resolution never occurs; finally they may soften and discharge externally. They have been compared by Hardy to the sebaceous cysts found on the scalp. The abscess once formed does not often discharge into the urethra, although a fistula may develop after the opening externally has occurred. Such is the origin of those persistent and difficult cases in which there is an opening into the urethra by the side of the raphe. In some cases the abscess may discharge however primarily into the urethra. This was thought to have been the course in a case I had the opportunity of examining *post mortem* some years ago. A large cavity was found about two and a half inches behind the meatus, which communicated with the urethra by an opening in the floor. This cavity formed the receptacle for more than an ounce of decomposed urine, and its walls were covered with a phosphatic deposit. It was supposed at the time that this unusual case must have resulted from a follicular abscess which had opened into the urethra, thus giving entrance to the urine which produced a gradual dilatation of the sac. The follicular abscess rarely gives rise to any marked symptoms, and its presence is only manifest when the swelling is discovered. There is neither pain or obstruction to micturition. The treatment consists in opening the sac freely, and if it does not readily heal by granulation, touching its surface with nitrate of silver.

In conclusion I will call attention to a form of abscess which is not generally described by surgical writers, and which indeed is not often met with. It does not properly belong to the class which has just been considered, as it

is not in any way dependent upon the implication of a glandular apparatus connected with the urethra by efferent ducts, and is not therefore even due to the extension of a preceding urethritis. The abscess of which I speak is due to a phlegmonous inflammation of what is known as the prevesical space or the cavity of Retzius, named from the Swedish anatomist who first described it. The prevesical space is situated behind the pubes and lower portion of the abdominal wall, and is occupied by the distended bladder when it rises above the pubes. I may here recall the fact that the sheath of the recti muscles formed by the blending of aponeurosis of the oblique and transversalis muscles is deficient posteriorly in the lower fourth so that the muscle is here separated from the peritoneum only by the transversalis fascia without the proper sheath intervening as is found above. "The deficiency thus resulting in the posterior wall of the sheath of the rectus muscle is marked superiorly by a well defined lunated edge whose concavity looks downward towards the pubes, the semi-lunar fold of Douglas" (Quain). The prolongation of the extremities of this fold downward forms a lateral boundary to the provesical space which corresponds to the outer edges of the recti muscles, this boundary is however incomplete below.

The transversalis fascia is intimately blended with the semi-lunar fold of Douglas and thus forms a well defined boundary to the space above. The space thus described is enclosed in a transverse line across the linea alba about 3½ inches below the umbilicus, and two perpendicular lines corresponding to the outer edges of the recti muscles, and is filled with a loose-meshed areolar tissue, which readily permits the separation of its anterior from its posterior wall by the distended bladder or a pathological formation, and is continuous with the peri-vesical and peri-rectal connective tissue below.

It is necessary to recall this anatomical arrangement as an accurate description of this region is not found in our general anatomies. In a thesis, entitled "Tumors, Acute and Chronic of the Prevesical Space, or of the Cavity of Retzius," abscesses of this region are described by G. Bowilly.

"The prevesical, or pre-peritoneal phlegmon is," he says, "an inflammation of the areolar tissue situated in front of and around the bladder where it is deprived of a peritoneal covering. The semilunar folds of Douglas above and their partial adhesion with the sheath of the recti muscles on the sides gives at once an inflammation in

this region the character of a pretty well defined tumefaction in the hypogastrium, extending from the pubes below, the external borders of the recti muscles on the sides, and the umbilical region above." A description of the phlegmonous inflammations of this region which may result in abscess will occupy the rest of the report. The facts set forth have all been taken from the brochure of Bowilly.

The abscesses found in this region are divided into idiopathic, or those arising in the prevesical cavity itself, and symptomatic or those in which the cavity is invaded from suppuration occurring in neighboring tissues. In the idiopathic cases age and sex play a prominent role in predisposing to this affection. Thus all the cases reported were from eight to thirty-one years of age, and of twenty-seven cases twenty-three were in males. In the symptomatic cases sex loses entirely this importance, for in twenty cases eleven were males and nine females. The development of abscess in the prevesical space is so frequently preceded by symptoms of troubles in the digestive tract that the relation of cause and effect cannot be ignored, though it is difficult to explain.

The symptoms referable to the digestive tract have been referred to dysentery, dyspepsia, violent colic, obstinate constipation, or diarrhea and in some cases typhoid fever.

Hypertrophy of the prostate and stricture of the urethra may give rise to a prevesical cystitis which usually results merely in a thickening of the tissues about the bladder, but which at times develops an extensive abscess in this region Abscess of the prostate itself has only twice been observed to extend to the prevesical space. In woman it is seen as a complication of suppuration in the broad ligaments, or the perinterine tissues. The extent of the tumor in the hypogastrium varies greatly in different cases,—in some it may rise just above the pubes, while in extreme cases it reaches the umbilicus or higher. The abdomen is prominent in the median portion and quite flat in the inguinal region. The areolar tissue of the prevesical cavity is continuous below with the perivesical and peri-rectal tissue, and extension of the inflammation is apt to occur to those regions, giving rise to an induration which can be felt by rectal touch in the male, and vaginal examination in the female,—the perivesical tissues being involved in the one and the peri-uterine in the other. In the male the affection is at times caused

by ulceration of the bladder from cystitis, and in the female is often secondary to a peri-uterine inflammation.

The symptoms of this affection naturally divide themselves into those which precede the appearance of, and those which are coincident with a tumor in the hypogastrium. The early symptoms do not present anythi g characteristic. The onset of the attack may be marked by colic, constipation or diarrhea, tenesmus, nausea, vomiting, indeed all the general signs of peritonitis, with some cystitis, frequent, painful and unsatisfactory micturition, and occasionally though seldom retention. A tumor in the hypogastrium soon follows, and presents very much the appearance of a distended bladder rising above the pubes to a variable height. Situated in the median line it may be more prominent to one side or the other. The inguinal regions are quite flat. Fluctuation may be present. The rectal touch proves that the bladder is empty, and the prostate normal, beyond, however, the finger may discover an indurated mass. In the female vaginal touch shows the uterine neck fixed and immovable, and the anterior cul-de-sac occupied by a tumor. If the bladder is emptied by the catheter the swelling in the hypogastrium is not affected,—the instrument discovers a greater resistance to the point than is natural when the handle is depressed between the thighs.

Micturition becomes frequent and painful. Fever and vomiting may both be present. The patient lies with his legs flexed in order to relax the abdominal muscles. Resolution may occur. This result was observed in 8 out of 29 cases, and occurred in from 3 to 6 weeks after the onset of the affection. With a subsidence of the hypogastric tumor the general symptoms subside, though the urinary troubles may still persist. The formation of pus is announced by the aggravation of the general symptoms, and increase of the vesical troubles, and a decided increase in the size of the tumor.

If the abscess opens spontaneously it may discharge near the umbilicus, the pus following the obliterated hypogastric arteries or urachus, or the opening may occur just above the pubes, or into the rectum and the pus escape with stool, or it may open into the peritoneum and a fatal peritonitis follow. The amount of pus which is discharged from one of these abscesses may be very large. After the opening, if it is free, suppuration may cease after a variable time and a complete cure result.

The diagnosis of this affection can scarcely be made until the appearance of the hypogastric tumor. It is then apt to be mistaken for the distended bladder, especially as more or less complete retention may be present. It is, however, easily distinguished as the swelling is more irregular than a distended bladder, and moreover is not modified by catheterization. Rectal examination also may show the bladder to be empty. In those rare cases of sacculation in which there is a secondary bladder behind the pubes, which is not emptied by the catheter, the diagnosis may be very difficult. Tumors and abscess or extravasation in the abdominal wall, peritonitis and cases of rapidly growing osteo-sarcoma of the pelvic bones may all be mistaken for abscess of the perivesical space.

Careful examination should however enable us to distinguish them. The use of the catheter is most important in such an examination to clearly determine the relation of the swelling in the hypogastrium to the bladder. If the swelling is situated in the abdominal wall itself and involves the prevesical space it will be found impossible to depress the handle of the catheter so as to make its point prominent. At times it will be found impossible to introduce an instrument, and the rectal touch must be used instead. The treatment in these cases in the early stage should be to allay the inflammation and control its extension; rest and opium are the most effective agents we possess for this purpose, and in a reasonable number of cases resolution may be expected. In 8 out of 29 cases this result was obtained. When once, however, pus has been formed a free opening should be made. This opening however is always badly placed for drainage, and burrowing of pus is to be feared, involving the perirectal tissues and possibly finding an outlet through the ischio-rectal space.

DISCUSSION.

Dr. R. A. Vance, of Cleveland, said he would not exalt Bigelow's operation, perhaps, as highly as the writer, but he regarded it as a good operation. The operation itself, was, however, but the natural outgrowth of the operations that preceded it.

Dr. A. C. Miller, of Cleveland, thought that enlargement of the prostate was of more real importance than all the other troubles described. Prostatorrhea, or chronic gleet, is due to a diseased gland, and its treatment by injections borders on malpractice, as liable to result in stricture or abscess.

Dr. P. S. Conner, of Cincinnati, said that cutting succeeded so well, that, for himself, he did not care to change to crushing under ordinary circumstances. If he had a stone in his own bladder, he would prefer to be cut. Better results follow; he once saw an autopsy at which eight calculi were removed from a man's bladder, in whom lithotripsy had been performed seven times. Cutting would have removed these all at once. He preferred rapid crushing to slow, but no one should attempt the operation until perfectly familiar with the instrument. For inflammation of the prostate he recommended *hot* water rectal injections, by means of a double canula, or even an ordinary syringe, the stream being directed against the anterior wall of the rectum.

Dr. S. C. Dumm, of Constantia, spoke favorably of electricity for hyperesthesia of the urethra.

THE ETIOLOGY

OF

CONSUMPTION.

By D. N. KINSMAN, M. D.,

Columbus, O.

Morton in his treatise on Consumptions, treated of eleven varieties, basing his divisions upon their etiology. Bayle classifying on the basis of morbid anatomy described five kinds. Laennec reduced all forms to one *i. e.* tubercular.

Reinhardt and Virchow, led a revolt against this exclusive view and made two divisions. Niemeyer threw his influence on this side. Opinions at the present seem to be tending toward the adoption of Laennec's views, and the idea of the unity of the disease.

I shall use the term consumption in its widest sense. Tuberculosis may be marked by general or local deposits, and it is yet a question whether the pathological changes which have been attributed to catarrhal process pure and simple are not due to tubercular infiltration. On this point I will speak hereafter.

Too much stress has been placed upon the presence of the anatomical entity known as tubercle, and too little account has been taken of the condition tuberculosis, which must precede the tubercular eruption.

This condition is as closely connected with the subsequent eruption of tubercles as the stage of incubation of small-pox is with the subsequent eruption.

The forming stage although concealed is a part of the morbid process.

Jaccoud divides consumption into three forms on the basis of etiology. Hereditary, inborn and acquired. In the first class he places those who have lost one or both parents from consumption.

The second class comprises those whose parents have not suffered from any form of consumption, but have had their vitality reduced by debauchery, syphilis, privation and insalubrious surroundings.

The third class includes those who have clear records as to parentage, and have taken consumption by contagion.

There is no term in medicine which has been so loosely used as Heredity. It is used to denote the transmission of a tendency to a special morbid action. In this sense it is used by most of the profession when speaking of hereditary consumption.

It is used in the second place to indicate the actual transmission of a disease from infected parents to their offspring. This is the signification of the term when applied to syphilis.

Both of these usages cannot be correct. In speaking of syphilis we do not think a tendency to the disease has been transmitted. We know there was a "generative contagion" and we expect and are not disappointed in the outbreak of syphilis in the child of syphilized parents who have not been the subjects of successful anti-syphilitic treatment.

Recent developments in relation to the inoculability and contagion of tubercle, render it probable that we are coming to the position in which we shall be obliged to regard the hereditary transmission of consumption in the same light, in which we at present regard the hereditary transmission of syphilis. But it may be objected that the outbreak of syphilis is speedy, occurring during the first weeks of life and the causal relation is immediate and evident, while the development of consumption is delayed for years.

To this we reply, both diseases are inoculable. In both syphilis and tuberculosis, the fetus in utero shows the peculiar lesions of the two diseases, when the diathesis has been potent enough to destroy life. They each have a special mode of evolution. In both diseases we must conclude the new being has had its organization im-

pressed by the poisoned germ and sperm cells which united in its inception.

"Heredity," which, according to the profound and happy expression of Baume, is nothing but a "generative contagion," "may transmit to infants either the diathesis itself, or the physiological formula of constitution and temperament which will render them more apt to receive the germs coming from without and cause them to fructify."—*Fossagrives.*

"In hereditary phthisis, the diathesis, that is to say the vicious disposition to make tubercle, is here at the maximum. Contemporaneous with the conception of the being, it becomes an integral part of its personality, it is one of its attributes."—*Jaccoud.*

The tubercular diathesis intensifies from generation to generation, so that the intermarrying of those who are affected with the hereditary taint resembles a long continued cultivation experiment, till in the end the children of these highly diathetic parents perish before they arrive at procreative age,—abolishing thus the diseased progression by the destruction of the family. Such experiences are common. Nor is this increase of virulence of the infecting power of tubercle unknown in experimental pathology.

H. Martin has shown that tubercle is to be known by its inoculability—and this capacity for inoculability extends indefinitely, while pseudo-tubercles, or those growths caused by the injection of indifferent materials, cease to be inoculable in the second or third generation. He has further shown that the exposure of tubercle in a test tube to a heat of from 60° to 85° for a short time developed in the material such virulence as to cause the death of guinea pigs in a few hours, with acute peritonitis and gangrene of liver. While other guinea pigs inoculated with the fresh matter survived for weeks. Tuberculous matter exposed to the temperature of boiling water becomes innocuous when inoculated.

These experiments afford a strong confirmation of the idea that the poison in tuberculosis is parasitic.

Now if there is a contagion which can be transmitted from parent to child, we should expect the time would arrive, when, in cases where the diathesis is strongly marked from its existence in successive generations, the infection would pass beyond the fetus and affect a healthy mother during her pregnancy as occurs in syphilis.

That such a mode of transmission of tuberculosis may occur we think the following cases, reported by Hermann Weber, which I have quoted from Dr. Clapp's book, *Is Consumption Contagious*, render extremely probable.

J., had seen his mother, two brothers and a sister die of pulmonary consumption, and had himself on two occasions had hemorrhages when twenty and twenty-one years old. He became a sailor and was apparently in good health when he left home, in his twenty-fifth year. He married four wives.

First. A woman belonging to a perfectly healthy family. She enjoyed excellent health until her third pregnancy, when she began to cough and grow thin. She died after her third confinement.

Second. At the end of a year he re-married. The second wife having every appearance of health, but at the end of a year of conjugal life, she began to cough, spit blood and soon after died of quick consumption.

Third. The third wife belonged to an exceptionally healthy family consisting of a father, mother, four brothers and two sisters, all living and in good health. When she was married she was twenty-five years old, and continued to have good health, until her second pregnancy, when she began to cough, and have feverish turns. She had two hemorrhages, and when I saw her, seven weeks after her second confinement, she showed extensive lesions in the upper part of her lungs, also hectic fever and profuse sweats. A month later she was taken with severe hemorrhages, and died shortly after, eight months from the appearance of the first symptoms. The autopsy revealed pneumonia and tuberculous consumption combined, to make use of an expression employed by the late Dr. Addison, who visited the case with me.

Fourth. The fourth wife whom I also attended, had not a sign of consumption in her family and at the time of her marriage was twenty-eight years old, and in the enjoyment of perfect health. About thirteen months later, three months after her first confinement, which resulted happily, she began to cough, and had a little fever. Then very clearly defined signs appeared, first in the upper part of the right, then the left lung. She experienced some relief during a voyage which she took to Melbourne, but on her arrival there had a severe hemorrhage, and died a short time after her return to England, nine months after the appearance of the dis-

ease. The autopsy showed extensive pneumonia and tuberculous lesions in both lungs, as well as tubercles in the intestines, spleen and liver.

At two different times in 1854 and 1857, after the third wife's death, and during the illness of the fourth wife, I had occasion to examine J. His general health was excellent and he assured me he did not cough, and merely expectorated a little mucus in the morning. The upper part of the left thorax was flattened and percussion showed it to be less resonant than the right; inspiration was less distinct, expiration was prolonged and from time to time rales were heard.

He did not remarry, not wishing to expose his choice to "certain death." He was healthy and continued to do active duty as a sailor until 1869, when he was forced to keep his bed for some months on account of a severe fracture; he then began to cough. The upper part of the right lung which had until then been healthy became diseased, and consumption developed in the usual way and caused the patient's death in 1871.

The autopsy showed cicatrization where the disease had first seized him, and also more recent lesions.

Another case by same authority: W. belonged to a consumptive family. He had lost his father and two sisters by that disease, and had himself had hemorrhages and other pulmonary symptoms at the age of nineteen, but he had in three successive winters made voyages to Venice, and was so much improved that he considered himself well. When twenty-six he married. His first wife was young, in excellent health and belonged to a remarkably robust family. She began to cough near the end of her first pregnancy, had hemorrhage after confinement and died of consumption four months later.

Second. He again married in 1852, a young girl of twenty-one, perfectly healthy but not without hereditary taint. She continued healthy during her first pregnancy, and to the middle of the second, when she had several attacks of "inflammations of the lungs," followed by two hemorrhages from which she never recovered, dying of quick consumption four months after her second accouchement.

Third. After a rather short interval he again married. The woman was young and stout. Her father and mother were healthy, as were her four sisters and her brother. About three months after her second confinement she was attacked by inflammation of the lungs, from which she

never recovered. Both lungs were affected, the right to a greater degree than the left. She had two severe attacks of fever every day, frequent sweats, diarrhea and considerable emaciation. Tubercular meningitis set in a short time after my first visit to the patient, and she died nine or ten months after the appearance of the first symptoms. The autopsy showed extensive lesions on the right side, and a general miliary tuberculosis. The uterus was healthy.

The husband's general health appeared good; he could walk long distances, but when he remained quietly at home he suffered from dyspepsia. The regions above and below the clavicle on the right side were flattened, and when struck the sound was dull. The respiratory murmur was entirely wanting and once in a while dry rales were heard. The patient was hypochondriacal and filled with remorse several months after his wife's death, but he rallied and lived much in the open air.

He was stricken with typhoid fever in Germany, followed with a pleuro-pneumonia. He died of consumption six months after the fever.

By same authority: Z.—no information about his family—had two hemorrhages about the age of nineteen; was ill at this time several months, but had entirely recovered and had exposed himself to all kinds of weather without experiencing any ill effects. At the age of twenty-three he was married. His first wife was a healthy and robust woman, twenty-one years old, with no predisposition in her family to consumption, but after the birth of her first child she became ill and died in five months from quick consumption.

About two years after, he married a strong woman, twenty-seven years old, belonging to a remarkably healthy family. Eighteen months after her marriage, and three months after her accouchement, she began to cough and grow thin. The cough never entirely disappeared. Two months later she again became pregnant, and when I saw her she was in the eighth month of pregnancy and very thin.

It was a type of consumption in the last stages; the greater part of the left lung being affected, but not to such an extent as the right. A month later she was confined and lived three months after it. The autopsy showed lesions from recent sub-acute consumption, *i. e.*, infiltration of gray color and of different consistencies, cavities recently and irregularly formed, with no lining, and gray and yellow tubercles scattered about.

Z., the husband, considered himself well, nevertheless showed flattening in the upper part of the left side. The resonance on percussion was plainly imperfect, as well in the region above as below the clavicle as in the corresponding places behind.

Six years later, after his return from Germany, in 1865, he again had severe hemorrhages and died in 1866. I have no information of the autopsy.

The following case occurred in Ohio. Mr. B., had seen his father, mother, three brothers and a sister die of consumption. He had had cough, emaciation and expectoration for months but recovered. He was married three times;

First. A strong and vigorous woman in whose family after a lapse of twenty years there has been no consumption. She became pregnant, during which she began to cough. She rapidly sunk and died of consumption fifteen months after her marriage. In two years, he again married a large and robust woman, with no hereditary taint. She became pregnant, began to cough and grow thin during its progress and died eighteen months after her marriage.

The third wife was a frail delicate woman. No history of hereditary taint. She did not become pregnant, but died five months after her marriage of quick consumption. Last of all B. died also of consumption.

Nor is hereditary transmission of consumption confined to the human being. Burdon Sanderson says that the progeny of a Scotch bull, whose lungs were found stuffed with tubercles after his death, were infected with the disease. A phthisical ram infected fifteen or twenty of his progeny in a flock of merinoes. Guinea pigs tubercularized by experiments have produced tuberculous offspring. Tuberculosis is the transmitted diathesis. The transmission we recognize when the tubercle has been formed, for it is the only thing which the morbid anatomist recognizes as the index of tuberculosis.

Thus much on the nature of hereditary transmission.—I shall now consider the third category of Jaccoud, the acquired cases. In this class are placed those cases which arise by accidental implantation of the germ from an unknown source, and those where there is evidence of direct contagion—or communication of the disease from the sick to the healthy.

That consumption is contagious there can be no question. The number of experimenters and the general harmony of their results admit of no reasonable doubt.

Tubercle is inoculable and therefore contagious. By a contagion I mean a poison which has been elaborated by a diseased process going on in the body, and is capable of reproducing the same morbid process in any body into which it shall be introduced, hitherto unaffected. The proofs of this are drawn from the field of experimental pathology, with which all are familiar during the last decade, and from clinical observation.

I shall now report a series of cases illustrating the contagiousness of consumption. Some months ago I sent out a large number of copies of the following list of questions. I received twenty-five replies; too few for analysis, but many interesting cases were reported which I shall now introduce. I take this opportunity to return my thanks to all those medical gentlemen who have assisted me in this work.

1. Have you knowledge of the destruction of families by Consumption, in such a manner as to give evidence of the communication of the disease from the sick to the healthy persons of the family.

2. Do you know of any cases of the communication of Consumption from a phthisical husband to a healthy wife —or from a sick wife to a previously healthy husband.

3. Do you know of any instances in which Consumption has been introduced into a previously healthy family, by having a person sick with Consumption taken into their home, and nursed there till death.

4. Do you from the evidence of your professional experience believe Consumption is ever communicated from the sick to the healthy, unless they are the victims of a diathetic tendency to the disease.

5. Do you think Consumption more frequently arises in the children of parents who have died from the disease, than in the children of those who have died from other chronic diseases of early and middle life.

6. Can you give any estimate of the proportion of *hereditary* and *acquired* cases of Consumption in your practice.

I. G. was born in a family in which there never was a case of consumption known. He lived a healthy, active life working at the carpenter's trade. His wife descended from a family in which there was hereditary taint. In 1865 Mrs. G. had a hemorrhage from the lungs. I first saw her in 1866 when she was still suffering from a hacking cough and some emaciation. In October, 1866, she brought her daughter, aged 18, for examination. She had

cough and consolidation of the apices. She died in the spring of 1867. The mother became worse and had a succession of hemorrhages, severe cough, much expectoration and emaciation. Mr. G. occupied the same bed with his sick wife. In September, 1867, Mr. G. began complaining of sore throat and the laryngoscope showed what I diagnosticated tubercular ulceration of the larnyx. He became aphonic, The dysphagia became extreme, he emaciated and finally died in 1868, in May, I think. Mrs. G. died a short time after her husband. Three other daughters followed in quick succession, so that in five years the whole family was extinct.

I could never in Mr. G., recognize any respiratory change in the lung but harsh expiration. I think he was infected from his wife.

CASE 2.—Mr. C., age 33, consulted me in 1879, in February. Had until a few months ago been a healthy man. He knew of no hereditary taint in his family. He was married eight years ago to a woman in feeble health, who bore him one child. Consumption developed in his wife and she died in 1877. During her illness he had much of the care of his wife, sleeping in the same bed, till the close of her life. Six months after her death he began to cough and emaciate. His throat became sore about one year ago. He was aphonic when I saw him and had tubercular laryngitis. His feet were edematous. He had cavities in his lungs. He died the last of March 1879. I believe this disease to have been communicated to the husband from the wife.

Dr. Geo. W. Boerstler, of Lancaster, reports the following:

A. M. in whose family there is not known to be any hereditary taint: Father at 60 died from strangulated hernia; mother still living. Married Miss W. whose family is likewise free from hereditary taint. One child was born, the mother suffered great prostration during lactation. She subsequently had an attack of pneumonia from which she never recovered. Consumption developed and she died eighteen months thereafter. During her sickness her husband occupied the same bed with her till the close of her life. About one year after the death of his wife, A. M. married a second time, to Miss G., then a strong and healthy woman in whose family we can trace no hereditary taint. A short time after his second marriage, A. M. began to cough, had fever, emaciated and had hemorrhages from the lungs and died of consumption two years after the death of his first wife.

Soon after the death of A. M. his second wife was attacked with consumption and died eighteen months after her marriage. I think undoubtedly, A. M. took consumption from his first wife and communicated it to his second wife.

Dr. H. W. Henderson, of Marysville, Ohio, reports:

H. B. married into the family of J. N. Mr. B. began to cough in February, 1879, and had some hemorrhage from the lungs. Finding his cough increasing and strength failing he rented his farm and moved to the house of Mr. N., his father-in-law, "to die," as he said, for none of his family ever recovered from the disease he had. In October, 1879, his wife was prostrated by an attack of intermittent fever, leaving her only sister, aged 19, to act as nurse for Mr. B. and his wife. I cautioned Miss N. not to inhale the breath of Mr. B. when he was coughing as there was danger if she inhaled any of the particles of matter, of her contracting the disease. Mrs. B. and Miss N. replied: Then we both shall take the disease for we have inhaled his breath many times and could even taste it. The result was, Mr. B. died in December, 1880. Mrs. B. and her sister died of consumption in April, 1881. The deaths of the sisters occurred only five days apart. These were, I think, clearly cases of contagion.

W. married into the family of A. A's wife and three daughters died of consumption. One of the daughters was W's wife. I cautioned W. against inhaling the breath of his wife who was sick with consumption, during her paroxysms of coughing. Before the death of his wife, W. began to cough and shortly afterwards had a hemorrhage. He coughed and spit blood for more than a year. He then got better and is now living although suffering more or less from cough. There has never been a case of consumption in W's family. A most suggestive case on the influence of the breath of tuberculized persons in communicating the disease to others is reported by Reich and quoted in the second volume of Reynolds' practice Am. Ed. page 117, to which I refer you, for the particulars.

Dr. N. B. Ridgeway, of Galion, Ohio, reports:

John A. was attacked with what was diagnosticated consumption, yet there had never been a case in his family, either in the near or remote branches so far as could be learned. He had a cough and expectoration and there were evidences of a cavity in the left lung. He then improved for a time. A relapse followed, with an opening through the chest wall whence much matter was dis-

charged. He also had repeated hemorrhages from this opening, occurring at intervals for months. He was confined to his room for a long time. His father was his nurse for one year and a half, never removing his clothes to sleep for ten months. In less than year after the death of the son the father died of consumption. A daughter aged sixteen who nursed her father contracted the disease and died in a few months. Another son is now sick with hemorrhages. There were three fatal cases of consumption in this family in two years.

Dr. M. F. Lee of Columbus reports the following cases:

Mr. B., born of consumptive parents married at the age of 26 a perfectly healthy woman in whose family no evidence of hereditary taint could be traced. Two years after his marriage he began to cough, lose flesh and died in two years from consumption. During his protracted illness he was cared for night and day by his wife who slept in the bed with her husband till his death. A few months after, his wife began to cough, lose flesh and complain of pain in her right lung. Eighteen months thereafter she died. During her illness her brother who had nearly completed his college course abandoned his studies and nursed his sister, sleeping in the same room with her. Two months after the death of his sister he began to cough and complain of exhaustion. He had frequent hemorrhages from the lungs, and at the expiration sixteen months he died. A married sister who had hitherto been in excellent health, took care of the young man during the last six months of his life. After his death she became pregnant. She soon began to complain of trouble in her lungs. She emaciated so rapidly that in the seventh month of her pregnancy she was obliged to keep her bed. She suffered premature labor from the severity of her cough, and she soon died from consumption. The parents and two remaining daughters are still living, after a lapse of ten or twelve years in excellent health. The last mentioned persons had only an incidental contact with the members of the family who were sick and died. The evidence of contagion in these cases seems to me undoubted.

Mr. and Miss E., brother and sister, were members of a family of eight children. All of whom grew to an unusual size. In the family there is no history of hereditary taint. The father was injured in a storm and died from the effects of this accident. The mother died of carbuncle after the death of the father. The brother and

sister took charge of a farm a few miles distant. Here the brother was taken with consumption. He rapidly sunk. During his illness his sister had sole care of him, sleeping in the same small, badly ventilated room. A newspaper was hung on the side of the wall, against which the patient discharged his sputa. This paper hung here all night, desiccating by the heat of a stove, and then would be replaced by a fresh one. The brother died. Soon after his death the sister began to cough and in eight months died. The other brothers and sisters remain healthy. We believe the sister's disease was communicated to her by the diseased matters discharged from the lungs of her consumptive brother. Nor do we think it would be possible to devise a better mode for certain communication of consumption than was accidentally put in operation by these unfortunate people.

The following cases were reported by Dr. C. A. Bryce, of Richmond, Virginia:

Some years ago I knew a family of six members. There was no predisposition to phthisis so far as I know. The age of the sons was from 15 to 24 years. One of the sons contracted phthisis and he soon died. A brother who slept with the sick one and watched over him, soon after presented symptoms of consumption and died within four or five months.

Finally a third brother followed on as the others had and died in fifteen months. The father died of consumption about a year after the death of the third son. The eldest son who was married and lived away from the others, is still hale and hearty. The fate of the mother I do not know.

Dr. H. R. McClellan, of Xenia, O.. reports: Many years ago I was consulted by a young man in whose family there was not the slightest hereditary taint, relative to marrying a young woman who was tuberculized and then under my care. He asked me if there would be any danger of his contracting the disease, if he married her. I told him I thought not. He married her. In one year a son was born and in two years thereafter a daughter. Up to this time the wife's health seemed to improve. She now began to fail, and in two years she died. Her babe died of tubercular disease, her son and husband followed, both dying of consumption. In six years the family became extinct. I think the consumption was contracted from the wife by the husband. I have had many such cases.

The late Dr. Clarke in whose family, he often told me,

there was not a trace of hereditary taint, and who was a disbeliever in the communicability of consumption, died of the disease. He told me during his last illness, he knew he had contracted consumption from his wife who had died with it a short time before his death.

One other case I may mention. Into a previously healthy family a little girl born of parents, who died of consumption, was adopted. In course of time the adopted child died of consumption, and in less than six years thereafter, the mother and her two daughters died of the disease.

Dr. J. E. Shellenberger, of Piqua, O., reports: Mr. F., in whose family there was no history of consumption, died after having been sick more than a year, of the disease. A prominent sympton was tuberculous diarrhea. Towards the close of his life, an elder brother, age 30, nursed him day and night, sleeping by his side. He was a strong and healthy man who had been engaged in work in the open air. February 1, 1870, he began to show signs of failure of health. This was thought to be due to close watching and grief. He went to the country for a few weeks and when he returned I found he had symptoms of acute phthisis. There were no recognizable physical signs except harsh breathing. It was not long before he had hemorrhages and there was consolidation of portions of the lungs. Emaciation followed. There were large moist rales, fever and delirium followed. He died May 6th, two months after he ceased to work.

Mrs. S., a German woman in whom I can trace no history of consumptive tendency, lost her husband from phthisis after an illness of three years duration. During this time she took care of him, she began to fail soon after his death. She had a harsh spasmodic cough with little expectoration. In February, 1881, she had all the signs of consumption; cavities, expectoration, hectic and emaciation.

Mrs. E. died after many years suffering from catarrhal phthisis. Some time before her death Mr. E., her husband, began to cough and suffer from disease of the larynx. Subsequently there was rapid destruction of the lungs whereof he died soon after the death of his wife.

Dr. J. R. Black, of Newark, O., reports: Mr. F., the husband, a large finely developed and healthy man, and so far as I know, free from hereditary taint. His wife inherited the diathesis. They lost six children at or near adult life of consumption. The mother succumbed to the disease, and at last the husband died of consumption.

Dr. M. C. Cuykendall, of Bucyrus, O., reports the following: Mr. S., a farmer, age 28, in good health, whose mother and three maternal aunts had died of consumption, married Miss M., age 20, a farmer's daughter. She was in excellent health, and free from hereditary taint. They both enjoyed good health until the spring of 1880, when after severe exposure, Mr. L. began to cough and lose flesh. He sank rapidly and died of tubercular disease of the lungs in 1881. His wife nursed him through his entire sickness, sleeping at night most of the time in the same bed, and always in the same room. Four months after the death of her husband, began to cough and lost flesh rapidly. Both lungs became involved and she died ten months after her husband.

The foregoing cases I think conclusively show the communicability of consumption from the sick to the healthy by aerial contagion. The communicability of tubercular disease by food taken into the stomach has not been so fully studied, and from the nature of the question is more difficult of solution. Yet we have presumptive evidence that this mode of infection is far from uncommon. That the poison does enter the system, either adhering to or in the food, I believe is to be inferred from the statement of Ponfick, that in general miliary tuberculosis he has observed tubercles along the lining membrane of the receptaculum chyli. This infection he attributes to the action on the walls, of particles of contagious matter floating in the liquid contained in the vessel. In view of the possible infection of man from eating the flesh of tuberculized animals, the study of tuberculosis in our food animals becomes important in its relation to public health. "Thoroughbreds" of all animals except the horse are prone to take on tuberculous disease.

The horse only is kept with any regard to his physiological condition. Being used for speed or draft, and much in the open air and sunlight, he has almost entire immunity from tuberculosis and dies from emphysema and diseases of the vascular system or acute digestive disorders. The cow kept for milk or for breeding, is housed and shut out from sunlight for a large portion of the year. She weakens from the drain of her milk, and etiolates from want of sunlight and falls an easy victim to disease of the lungs. The cow suffers from the same form of tubercular disease as man, and this is much more common in this country than Perlsucht or "Bovine tuberculosis," and is distinct from it.

I have for some time been engaged in the study of the morbid anatomy of consumption—and this investigation has led me to certain conclusions upon the morbid anatomy of catarrhal pneumonia, and caseous or tubercular pneumonia which I deem important. A cow hopelessly sick, belonging to Capt. W. H. Foster, of Urbana, was slaughtered, and the lungs were sent to me. Externally the lungs were patchy from pleuritic inflammation, and small "sago-grain" bodies, presenting the macroscopic characters of tubercles. The lung on section was found filled with cavities from the size of a pea to that of a large cocoanut. Some were empty and collapsed with smooth walls, while others were yet distended with a light yellow matter softer and more watery than we are accustomed to meet in closed cavities in the human lung. At the sharp edges of the lungs were found many nodules which on section showed a caseous center.

The bronchial glands were swollen and contained caseous deposits. No "duck-weed" growths were found. Portions of the lungs were hardened in Muller's fluid and alcohol. Sections were made, stained in carmine and mounted in glycerine, whence drawings were made by Dr. G. M. Waters of Columbus. These drawings accompany this paper and will assist in the comprehension of the anatomical details. In studying the morbid anatomy we must remember what we see is the result of diseased action which preceded all anatomical change as well as accompanied its development.

There are two forms of chronic disease accompanied with consolidation of the lung. They closely resemble each other in their complete development and have been confounded. Their mode of origin and progress are essentially distinct. These two diseases are catarrhal pneumonia and caseous or tubercular pneumonia. Catarrhal pneumonia always begins in the smaller bronchia and is a secondary process. By insufflation and gravity mucus cells and serum are drawn into the alveolus or cause collapse of portions of the lung. The epithelium of the air cells proliferates until this product and migrating leucocytes distend the air cells. In the beginning of this morbid process the capillaries are distended with blood, later the exudate by pressure on the walls of the alveoli diminishes the quantity of blood in the vessels and may wholly obliterate them.

The morbid process may be arrested in its course and the contents of the alveoli soften and be discharged,

leaving the lung to return to health, or the morbid action may go on, nutrition be cut off from occlusion of the vessels by pressure. The exudate in the alveoli dries, shrinks, becomes caseous. This mass liquifies and in this process the lung tissue involved melts down and a cavity is formed.

The features of this process are congestion, proliferation of cells and stuffing of air cells by a deposit within the cells, and the lung thus affected within certain limits may return to health.

In tubercular pneumonia, sometimes called caseous pneumonia or the tubercular infiltration of Laennec takes place quite differently, as is shown by the drawings.

Figure 1, is a drawing of a portion of the lung structure at the beginning of the tubercular infiltration. Here we see the proliferation of the endothelial cells in the blood vessels as they run in the boundaries of the alveoli. By this proliferation the lumen of the blood vessel is in the beginning narrowed, and from their small size in the cow we are able to recognize the blood corpuscles in the clot in the blood vessels when a longitudinal section has been fortunately made, while at the same time we can clearly see the encroachment upon the lumen of the vessels by the endothelia of the walls. Near the center is a section of a vessel which is stuffed with fibrin and leucocytes and some distance from the vessels we see swollen epithelial cells adherent to the walls of the alveoli, where they are beginning to participate in the morbid process.

Figure 2. Here we can see a more advanced stage of the morbid process. In the centre at the junction of several alveoli we see the cross section of a blood vessel stuffed with fibrin and leucocytes. Around the outside are collected large cells. Above this vessel we can see a circular arrangement of cells which marks the site of tubercular nodule. The nodular form with the ring of cells taking on the fibrous appearance shows the progress has been comparatively slow, and the presence of "giant" cells in a tubercular formation means the same thing. Leading off from the central vessel are great streams of cells in the alveolar walls, where cells are closely packed, where the progress of the change has been more rapid. Here also we see scattered swollen cells adhering to the alveolar walls. It is to be particularly noted in these specimens the change is along the blood vessels and the morbid growth encroaches upon the capacity of

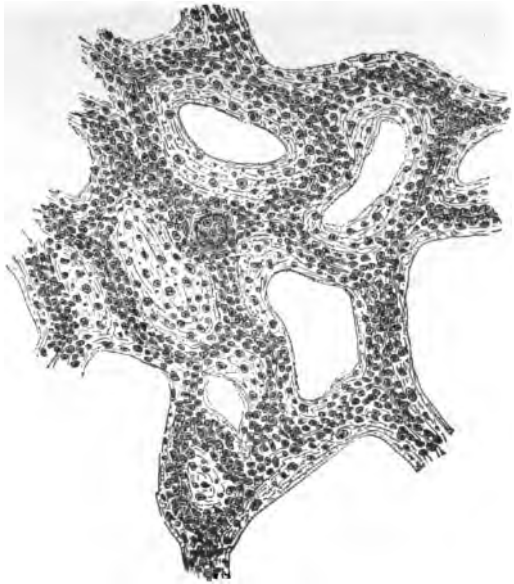

Fig. 1.
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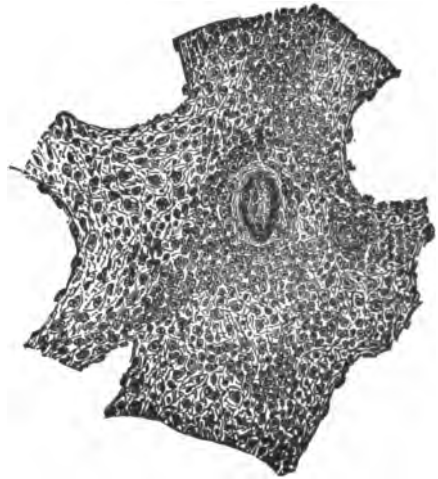

Fig. 2.
1x250.
Reduced $\frac{1}{3}$.

(Drawn by Geo. M. Waters, M. D.)

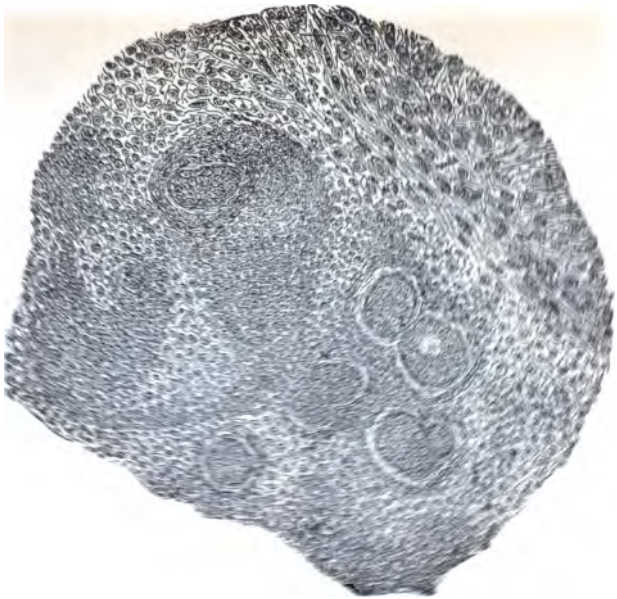

Fig 3.

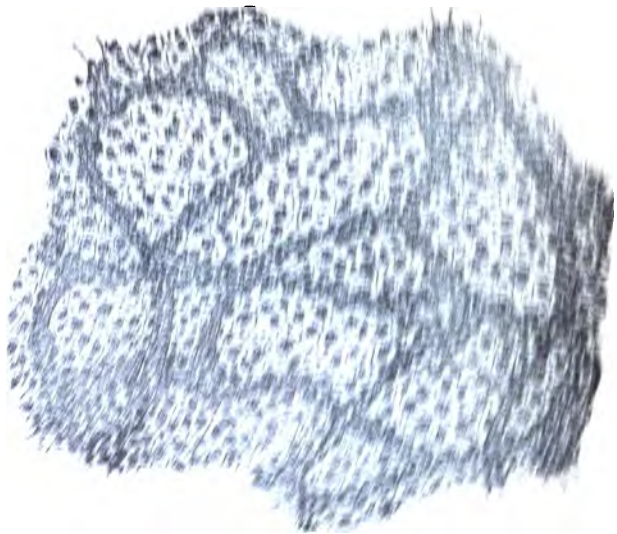

Fig. 4.

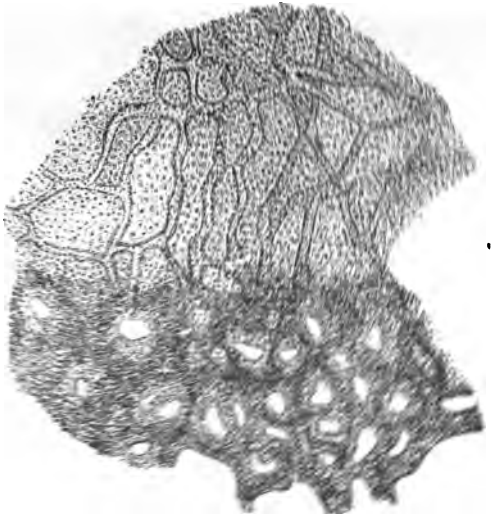

Fig. 5.

1x150.

Reduced g.

Fig. 6.

1x200.

Reduced g.

[illegible]

the air cell by pressure from without and not by filling from within, as we have seen was the case in catarrhal pneumonia.

Figure 3. This section includes the wall of a bronchus. At the upper portion we see the cartilage cells, below in the central portion of the field we see the lung structure has been completely invaded by the infiltration. Here are several tubercular nodules, one of which shows the caseous center. Here the process has been slow, while we see below closely packed cells, marking an intenser grade of morbid action.

Figure 4. Here we present a portion of the pleura which is undergoing the same morbid change. The endothelial proliferation is seen in the vascular walls, with which we have alreadry become familiar in the lungs, and when we meet a cross section of a vessel we find it narrowed or occluded.

Figure 5 shows a portion of the pleura and the adjacent lung structure. The encroachment of the alveolar walls upon the cavity of the air cells is more distinctly shown here. The connection of the pleural vessels with those of the lung is seen and gives a suggestion of the spread of the diseased action by continuity of structure.

When we meet a vessel in the pleura which has been sectioned longitudinally we see the same appearance with which we have been made familiar by the drawings of Rindfleisch and Cornil and Ranvier, on tubercule of the arteries of the pia mater.

Figure 6. Here we present a drawing of a portion of a bronchial gland. In the upper portion we see a vessel with large cells in its wall. Lower down we see a section of another vessel which has been occluded. Elsewhere we see streams of cells closely packed together and extending along the side of the blood vessel in what may be a lymph path. The difficulty of distinguishing lymph cells from tuberculous elements in a gland is here seen. In this gland we have found caseated tubercles which are not shown in the drawing. These specimens it seems to me support the doctrine of the unity of the pathological processes entering into the production of consumption. The eruption of tubercle may in any given case appear both in the nodular and infiltrated form. Tubercular eruptions may be associated with catarrhal affections of the organs, especially of the lungs, but to associate them as cause and effect is to my mind more

than our knowledge at the present warrants. I long held this doctrine, but at present I think where we find these two conditions co-existing, it is because a latent diathesis has been manifested, contemporaneously with the catarrhal process, *i. e.* the catarrhal process has acted as an exciting cause.

The special features of caseous or tubercular pneumonia, are, 1st. The initial stage of the process is associated with a diminution of blood in the affected part and at the climax of the neoplastic process, the blood vessels are obliterated. 2d. In all organs of the body this seems to be the course of tubercular inflammation. 3d. Upon this initial occlusion of the blood vessels, depends to a certain extent the want of vessels in the tuberculous neoplasm. 4th. Tuberculous inflammation is an affection of the connective tissue. Ordinary inflammation in this tissue produces exudates which speedily vascularize. The products of tubercular inflammation never vascularize. 5th. The occlusion of the air cells is produced by pressure from the outside in the walls of the alveoli, while there is but slight participation of the epithelial cells of the alveoli. 6th. In whatever form tubercle is deposited from its want of vascularization it must caseate, more or less completely, and liquefaction follow, except when it is deposited slowly and becomes sclerosed. In this case there is still the central caseous knot. Grancher has seized upon these two facts for a partial definition. "Tubercle is a fibro-caseous neoplasm of nodular form, and characteristic of a general malady, tuberculosis."

Subsequent to caseation in the lungs liquefaction of the tubercular mass follows involving the lung tissue and forming a cavity. Once the lung has become the seat of tubercle it can never again be restored to its integrity of structure.

Thus have I endeavored to present the pathological features of these two forms of lung disease so often confounded. They have no features in common. From all I have learned concerning tubercle I believe it is the product of a specific inflammation. If the disease is specific there can be but one efficient cause and we must abandon the theory that tuberculosis can have multiple efficient causes. Attendant circumstances may hasten or retard the development of tuberculosis but to conclude that they can do more is illogical. Tubercle is inoculable and contagious. Tuberculosis does not therefore arise de-novo, but depends upon a germ, introduced

into the organization at its inception or subsequently from without. Concerning the nature of this germ we are in the dark.

The recent announcement of Koch, if confirmed by other experimenters as has been done by Baumgarten, will throw light upon this obscure field, and we may hope that consumption will become subject to hygienic precautions. When to these measures is added the modified treatment which must necessarily arise out of new views of the etiology of consumption we may hope to attain as fair a success in its treatment as we have already reached in the treatment of other infectious diseases. The infectiousness of consumption is no new idea. Morton writing nearly two centuries ago said: "This Disease is also propagated by Infection. For this Distemper, as I have observed by frequent Experience, like a contagious fever doth infect those that lie with the Sick Person with a certain taint.—*Phthisologia, page 67.*

CONTAMINATIONS

OF

DRINKING WATER.

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The Ancients reckoned water as one of the four elements. They knew that it played an important part in the tissues of all plants and animals, and believed that it is convertible either into an air or an earth. The first, because it so readily disappeared from their sight on evaporation: the second, because all waters (even the most transparent), when boiled away, left behind a residue, sometimes more—sometimes less, but a something in all cases which was in their phrase, an earth. They held to the doctrine of the "Correlation of the Elements," as we hold to the theory of the "Correlation of the Forces," and imagined that the earthy residue to which they attributed the qualities of "dry and cold" resulted from the action of fire upon water, the "hot" of fire being quenched by the "wet" of water. One hundred years ago (1783), this notion of the elementary nature of water was accepted by all men as true. It agreed with the facts as far as they knew them, and we can now see that they came naturally to this hypothesis by reason of the wonderful property which water has of dissolving nearly all other substances, gases, liquids and solids. Of course, they knew as well as we do, that its solvent powers vary, but they never came to a realizing sense of the fact that solid rock like marble, or granite, would little by little enter it in

state of solution: much less of the conditions which facilitate such solutions or which increase the solvent powers of pure water.

This is so important as to merit more formal statements, viz: (1) Distilled water is capable of dissolving to a greater or less degree almost every known compound. (2) This solvent power is, as a rule, increased largely by heat and by pressure, and (3) also by its first absorbing some substance which in solution will exert a chemical action upon matters afterward exposed to it. Prominent among these "chemical powers" are oxygen, the scavenger of Nature; carbonic anhydride, the Ariel among acids; ammonium carbonate, mildest of alkalies but yet disintegrating the hardest of rocks. Besides, there are other salts, like the chlorides, nitrates and sulphates of the alkalies, and alkaline earths, always open to a partnership, or a trade with any other entity that happens to be thrown in their vicinity. All these, through the agency of water, work out the ceaseless changes which are everywhere manifest in the natural world.

Our knowledge regarding the mutual action and reaction of bodies brought together in aqueous solution is very limited. Sometimes a precipitate is formed, and this fact is easily expressed in the accepted nomenclature of chemistry. But even when this is not the case, we are led to believe that there is nearly always a chemical transfer or transformation of some kind. The strong acid will naturally combine with a strong base, as sulphuric acid with potash, leaving the weaker acid to find a weaker base for its appropriate partner; but this elective affinity is modified and even reversed by a number of conditions. The only one which needs mention at present is the so-called "law of mass" which expresses the unquestioned fact that a very large quantity of a weak solvent may dissolve or decompose substances usually reckoned as insolvent, or prevent their precipitation if dissolved—as for example, barium sulphate is soluble in a large quantity of strong sulphuric acid; or is changed to barium carbonate in presence of a very large quantity of an alkaline carbonate.

Chemical changes, like these indicated, are taking place in enormous quantities wherever water runs or the winds blow. As a final result, the potable water which is offered to our lips is always more or less admixed with various other substances, absorbed or dissolved. If it be bright and sparkling, free from offensive odors, and also free from a marked saline

taste, that is, if it offends none of the senses, it is generally considered acceptable as a drinking water. If water could be obtained chemically pure it would not be palatable. Distilled or even boiled water has notoriously a flat and insipid taste. Some have reckoned such waters as unwholesome. Artesian waters, as is well known, require to be cooled and aerated. In situations where distilled waters are the sole supply, as on board of ships on long voyages, a surrogate of mineral matters is sometimes added to contribute to the taste the expected piquancy. So also, this "taste" frequently becomes a matter of education and, in every town, there are many persons who require considerable additions to the natural waters of the vicinity to gratify their palate. Thus, the average Frenchman takes to *eau sucre*, the young American to carbonated waters—soda water. The mild mineral waters, Seltzer and the like, are in general use in all civilized countries, not so much (as I am led to believe) because of their medicinal effects, real or supposed, as for the added bouquet or taste. The use of these mineral waters is constantly growing and hardly a drug store on a frequented street is without a throng of clients who obtain nearly all of their drinking water from the natural and artificial Vichy, Congress, Apollinaris and the dozens of other brands which are kept on sale. Some of these waters may act medicinally by reason of the salts they contain, but it must be added that not a few contain so small a quantity of salts that even the attendant deities of the fountain prescribe enormous doses—several quarts per day. Whether for good or for bad, visitors at mineral springs often drink intemperately of the waters; but it can seldom be said that any one has been injured by such over tippling.

These facts are known to every one, they are matters not only of common notoriety, but are thrust upon the public by all sorts of alluring advertisements; and the value attached to these liquids is such, that serious disputes have arisen as to whether a "natural water," which contains 300 grains of sulphate of soda to the gallon, is not a more efficacious therapeutic agent than an "artificial water" which also contains 300 grains of sulphate of soda to the gallon. It has been said that some of these mineral waters really contain enough of salts to enable them to act therapeutically, and very likely this is true. Nevertheless, it is easy to remember that a large quantity of ordinary drinking water acts as a cathartic upon the

average drinker; and if it does not, a pinch of salt, such as the devotee adds to Blue Lick, will accomplish the desired effect. As to the amount of dissolved mineral matters which may habitually be taken in potable water without injury to the health of the drinker—nay even to his apparent benefit, no statement can be made with authority. It has been assumed that 60 grains to the gallon is about the limit, before reaching waters that are to be classed as mineral or medicinal. At the same time, I cannot imagine, either that so large a quantity is necessary to stamp waters as medicinal, or that a tithe of this amount in chlorides, carbonates and sulphates of soda, potash, lime and magnesia, may not be regarded as a useful addition to drinking water. It must, however, be added that some potable waters of the sort have a bad reputation; for example, magnesia waters are thought to be a cause of the goitre; calcareous waters, especially those containing the sulphate, are supposed to induce diarrhea; both are debited with stone and gravel: but these questions cannot be considered as settled.

Of course, it will be understood that there are exceptional mineral waters which contain active poisons, such as copper, lead and arsenic, and that these poisons may be added to the natural water by carelessness or by design. Of such unusual cases, nothing more can be here said. Summing up the facts known in regard to mineral matters dissolved in drinking waters, it is pretty generally agreed that with the exception of copper, zinc, and lead salts accidentally introduced by fault of the plumber, a moderate amount of such mineral matters as salts of the alkalies and of the alkaline earths, must not be regarded as injurious contaminations. It is, however, true that a change of waters from soft to hard has induced diarrhea in susceptible persons. Generally speaking, the effect soon passes off, and habit will, in less time than is usually imagined, change to the opposite idiosyncrasy.

Before leaving this point, it is necessary to note that some mineral matters are present in river waters, not dissolved, but merely held in suspension. These matters are generally fine clay and sand which are neither soluble in water nor in the alimentary canal. If swallowed, they may possibly somewhere collect into a sand-bar or a mud dyke in the canal; but cannot in any way enter into the circulation. Nevertheless, they may also act as mechanical irritants. Such muddy waters are not attractive, and require a long time to settle clear; but, as a rule, they

are quite soft, and, when properly filtered and cooled, are among the most palatable of potable waters.

Hitherto your attention has been directed only to the mineral or inorganic matters present in potable water. Of far greater importance to the consumer is the presence of organic matter, whether vegetable or animal.

ORGANIC MATTER is a large word, and has become a bugbear to the laity if not to the faculty. Here it is of the utmost importance to differentiate. In the first place, "organic matter" includes such bodies as starch, sugar, or the carbohydrates, and such as albumin, casein, fibrin, or the nitrogenous bodies, as well as other groups. It must be granted that almost any one of such organic compounds, as would properly be even mentioned in a report like this, would be classed as an aliment and, as such, be, in appropriate quantities, a desirable addition to our food. Every day we mix in our stomachs, with the water we drink, matters that include starch, sugar, albumin, fibrin, casein, and the rest of the list, and we flatter ourselves that the more extensive the mixture the better shall be the result. At any rate, we do not reckon that flour, sugar, eggs, meat, cheese, peas, etc., are poisons, and are utterly unconscious that these substances are classed among organic matters. For all our short-sightedness or actual ignorance, these are the very substances which furnish the "organic carbon" and the "organic nitrogen" to potable water. Those which contain nitrogen are thought to be especially of an alarming character, as these only can be transformed into ammonia, nitrites and nitrates. But a nitrate is not in itself a terror, a good sized dose of salt-petre is not septic, nor is ammonia. A nitrite, being both an oxidizing and a reducing agent, is to be regarded with more suspicion; but not enough is known of the action of the nitrites to lay any charge against them, with any certainty of proof. It is also to be noted that the amounts of nitrogenous products of decay are in most cases very small and are, chemically speaking, incapable of producing great changes. The products of the decomposition of non-nitrogenous matters have in themselves never been charged with being poisons or the immediate sources of disease. They are principally carbonic anhydride and alcohol—of course extremely dilute and rapidly changing to other products, like acetic acid. Whence then comes the almost universal outcry against organic matters?

Dead organized matters, that is, the whole or parts both of vegetable and animal remains, are found in water in three states: First, As fresh and undecomposed matters suspended in water. These are certainly without harm and are in no way to be regarded as sources of present harm—any more than so much starch or albumin. Second. As matters in a state of active decomposition. This decomposition naturally takes place by means of certain ferments: (*a*) soluble, but not containing living forms; (*b*) insoluble and always accompanied by, if not consisting of, living organisms of a low order. Among the soluble ferments must be reckoned such bodies as diastase, emulsin, ptyalin. Among the organized ferments are such structures as the yeast plant, the various bacteria and other low forms of life—recently brought to our knowledge by the researches of Pasteur and his associates. The latest researches indicate that the conversion of the albuminoids to nitrites and to nitrates is due to organized ferments of similar character, and we all know what Koch would have us believe about the specific germs of disease. Here let it be noted, that it is not necessary that these theories be accepted regarding the office of such ferments. They are always present when nitrogenous matters are in active decomposition and their presence may be taken as a sign that such putrefactive changes are in process, whether they are the active agents in causing them or not. At all events, putrefying organic matters have in all ages been justly regarded as objects of suspicion even when disease has not been directly traced to them. Third, The organic matters may be the final products of such changes—the bacteria and other such bodies will have done their work and have died; the products of decay, carbonic acid, ammonia, or the nitrates, will be dissolved in water, and as already stated can hardly be viewed with alarm.

Nevertheless, the presence of ammonia, of nitrites, or of nitrates, in water is a proof of a previous organic contamination and a suggestion that the contamination has not fully run its course. Hence in analyses of potable waters, the actual per cent. of ammonia found represents the decomposition which has already taken place; the per cent. of the so-called albuminoid ammonia, that is, of ammonia which may be obtained by the action of chemical reagents, like an alkaline solution of a permanganate, represents the uncompleted decay of other nitrogenous matters. In this view of the matter, such products serve

only to call attention to a possible source of danger—because these nitrogenous matters are the necessary nidus of organized ferments and supply the food which is as necessary to their growth and reproduction as water, and starch, and oil and albumin are to the nourishment of human beings. In some cases, they furnish indications whereby a future contamination of the sort may be prevented.

If these points are well taken, fresh organic matters are harmless, when merely suspended in water, but are potential elements of contamination. The final products of fermentation and of decay are also harmless unless present in large quantities. Some of these products, as carbonic anhydride, contribute notably to the pleasant taste of drinking water.

The second stage is, therefore, the only one which need cause alarm; but, if the researches of modern science count for anything, the presence of even a trace of animal matters, say 1 part in 1,000,000 in a state of active decomposition, or of the microscopic living forms which attend putrefactive decomposition, may justly give occasion for suspicion and fear. All filth must be regarded with horror as likely to be a hot-bed of putrefactive ferments which may possibly enter the drinking water of a community as sewage, and cause serious epidemics of diarrhea, of dysentery, of typhus, and of cholera itself. Not a few instances of such epidemics have been traced directly to the water supply. Most to be dreaded of all organic products are those derived from man. All human excrements are in a sanitary sense dangerous, but most especially those derived from persons who are at the time suffering from diseases like those mentioned. There seems to be very little doubt that drinking water is one of the principal agents by which zymotic diseases are propagated. Our National Board of Health last year instituted a special investigation as a contribution towards establishing or refuting this belief.* The facts which have already been gathered both in America and in Europe show a manifest relation of cause and effect as between putrefying and disease freighted dejections and epidemics of cholera, dysentery and typhus. No chemist has yet attained the skill sufficient to detect the ferment of such diseases, and no microscope is piercing enough to exhibit their germs. They lurk unsuspected and become manifest only by their fruits. Our warning signals are

*Their report was not ready in June.

principally those which indicate that a nitrogenous decay has taken place.

I have neither space nor time to enlarge upon these matters, much less to give in their necessary detail the numerous cases which have established the foregoing points. The lesson which sanitary science has prepared for humanity in regard to drinking water is briefly this:

Mineral matters present in water to not too great an excess seldom are to be regarded as a source of disease. Organic matters in decay, filth of all sort, sewers, privies, cess-pools, are always to be viewed as a probable source by which disease may be propagated and especially when they are present in drinking water. The presence of an excess of chlorine may indicate that urine has entered the well or spring.

It is proper to note that organic life; such as growing plants, and even animals may act to purify contaminated waters. These organized bodies are like other plants and animals, and are matters in suspension. The aquaria show how these two classes may balance. It has been a question hotly debated by the Rivers Pollution Commission and the London Supply Board as to whether running waters are self-purifying. The last report of the London Board seems to establish its probability. They hold, and apparently with sufficient reason, that running water, contaminated by vegetable matters or by animal offal, speedily becomes sufficiently pure for drinking, because:

1. Little of sewage is dry matter.
2. Much of the solid portion will speedily settle to the bottom.
3. A notable part, especially of fresh matters, will be consumed by the fish and other inhabitants of the stream.
4. Another part will be burnt up by the large proportion of oxygen present always in running water, and
5. Finally the small proportion left will be so diluted as to be rendered harmless.

Shallow wells have no such safeguards and are often unfit for use. On the other hand, deep wells generally furnish a palatable water quite free from organic impurities, containing less, in fact, than rain water. This is due to the fact that underground waters are also oxidized by underground air, and, under favorable circumstances, completely.

Space and time forbid further consideration of the sources of water, and means of storing and of purifying them, but I have perhaps said enough to enable me to state what constitute impurities of drinking water.

These are an excess of inorganic matters dissolved or suspended—which render the water less pleasant to the eye and agreeable to the palate.

A small amount of organic matter in the state of decomposition is a most serious contamination and dangerous, even though too small to be detected either by the microscope or by chemical reagents. Finally, natural waters, at their sources wholesome and palatable, may be so contaminated before they reach the consumer, as to become suspicious or even dangerous. Too great care is not likely to be given to the collection, stowage in reservoirs and final transmission through pipes, of water intended for household use.

A large amount of absorbed oxygen and carbonic acid is to be reckoned desirable. A small amount of dissolved salts of the alkalies and alkaline earths is not unwholesome.

The best water for drinking is that obtained from perennial springs or deep wells, when not too hard; then that from rains and mountain streams.

CONCERNING THE ETIOLOGY

OF

Certain Cutaneous Affections.

BY

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CLEVELAND, O.

It seems a common faculty of the medical mind to choose sides and to herald its labors under some appropriate *adsum;* in short, to arrange itself for or against a certain dogma or train of reasoning, and, while for purposes of order and classification such a course may be commended, yet it is evident that a too rigid adherence to a prescribed line of thinking is derogatory to the highest advancement; and in no case, I think, is this tendendency more clearly shown than in the study of cutaneous medicine.

The inflammatory affections of the skin, which, of all its ills, comprise by far the greatest number, are at present the special objects of investigation and national controversy; and here let me call your attention for a few moments to the etiology of some of the more common maladies of this group. Foremost stands a superficial dermatitis, one most common of all cutaneous affections, eczema, which is due, according to M. Hardy and his eminent *confreres* at the St. Louis, to a peculiar vice of the economy which they term the *dartrous diathesis:*— although the subjects of this peculiar state present the appearance and enjoy all the attributes of good health, yet they are in possession of a vice common and giving origin to maladies distinct in pathology and unlike in appearance.

The rising school of dermatology in this country, although not so uniform in settling upon a special dyscrasia for this disease, yet regard it as a constitutional malady and some have even suggested an "*eczematous diathesis.*" Dr. Bulkley, in his recent admirable work on eczema, favors a constitutional condition, which, if known, might account for the phenomena manifested upon the skin; at the same time Dr. Bulkley makes his opinion purely a matter of faith, by stating that the peculiar and mysterious condition has never been detected and probably never will be.

Again, the English dermatologists, excepting Sir Erasmus Wilson who goes to the opposite extreme, adopt a local pathology for the disease in question. Dr. Pye-Smith, in Guy's Hospital reports for 1881, says: "With respect to the pathology of this commonist and most characteristic form of eczema, I confess, that I am quite unable to recognize its association with any other disease, or with any supposed diathesis, constitution, dyscrasia, or temperament. It has, I believe, nothing to do either with rheumatism (*i. e.* multiple synovitis with pyrexia,) or with gout (arthritis with deposits of urate of soda), or with scrofula (caseous infiltration of lymphatic glands), or with rickets, or with anemia, or with gastric or uterine disturbance. No doubt we see cases of eczema in conjunction with each of these conditions; if this never happened, we should have to investigate the reason of such mutual exclusion. As to the blood especially, we have not, so far as I know, the least reason to suppose that its condition in eczema differs from that of health."

The German school of dermatology, following the teachings of the late Prof. Hebra, also look upon eczema as essentially a disease of the skin and nothing else, at times accompanying, preceding, or following other maladies but only as an occasional coincidence. Thus you see the great centres of medical thought seem to be at variance; but are they really so? If we say that eczema is a superficial dermatitis due to an *irritation* of the sensitive filaments of the peripheral nerves, that the origin of this irritation may be either external (*i. e.* local), or internal (*i. e.* constitutional) and that there is *no special* or *specific irritant*, do we not harmonize this variance and at the same time pursue a more rational course? We agree all are not equally sensitive to irritation, but histological structure and physiological action will probably explain this peculiar susceptibility, this predisposing

cause, this diathesis; hence, he who treats eczema by rule will often fail; but he who takes the etiology of each case as a special and distinct object of study, must surely meet with success.

Then again, *psoriasis*, although a less talked about and much less written about disease than the preceding, still presents features of equal interest. Psoriasis has not escaped the stigma of classification; neither has it been left without a diathesis; efforts have been made to associate it with some special physiognomy or complexion. Upon the suggestion of Dr. Stephen Mackenzie, of London, I noted the color of hair, irides and other peculiarities of 169 consecutive cases of psoriasis with the following results:

M.	F.	Dark Hair and Irides.	Light Hair and Irides.	Light Hair and Dark Irides.	Florid Comp.	Pale	Hist. of Disease in Family.	Total
75	94	109	58	2	54	115	23	169

But I regard these statistics as almost worthless, and, if taken alone, liable to mislead on account of the localities from which they were taken. Many were seen in the east end of London, among a Jewish population, others were seen at the St. Louis, in Paris; statistics of any other disease would give similar peculiarities excepting possibly sex and family history. Equally strong efforts have been made from time to time to associate psoriasis with certain diseases, as for example, rheumatism and gout, with no better results. But psoriasis does occur in people who have suffered from an attack of rheumatism, as well as in those whose immediate ancestors, or even the patients themselves, have been afflicted with gout—I mean no vague term nor visionary diathesis, simply the presence of urate of soda in the fibrous structure of certain joints. If it were not so it would prove that rheumatism and gout protected from psoriasis. Neither have we any reason to think that their blood, any more than their nerves or their brains, is different from other peoples. From this practical attitude we must view it, and until further and more positive proof of any association is made, regard it as essentially a disease of the skin, inherited it may be; peculiarities of structure are often so whether they give rise to calcareous degeneration of arteries, mental idiosyncrasies or an idiopathic inflammation of the skin. And here the questions often arise why this symmetrical implication, why this uniformity

of distribution if it be not a constitutional malady. This is precisely the point I wish to make, it selects the integumentary covering of the elbows and knees, next in frequency other flexor surfaces of the body, not because these positions are supplied with the same blood, for no part of the integument is favored with a private supply of nourishment, but because the physiological phenomena in these positions resemble—although in a minor degree—the pathological phenomena of psoriasis; in other words the skin on account of its anatomical position and from its own structural formation is predisposed to take on the inflammatory action we call psoriasis.* We may change even the flexor surfaces in certain individuals whose integument—not their humors nor their blood—is favorable to this dry form of inflammation. For instance: I have distinctly in mind a case of this kind in a female who in early life had distinct patches of psoriasis on her elbows and knees. Fifteen years later she presented herself with a second attack. At this time not only did it occupy its former sites, but also a belt of the disease completely encircled her abdomen, corresponding in size and position to the bands of her skirts, and the constant irritation of these was supposed—and it seems to me upon rational grounds—to have had something to do with the distribution of the disease. Let us then no longer pin our faith upon imaginary diatheses but upon facts alone. The humoral pathology is long since dead, and until something more practical arises trust to the gradual unravellings of pathology.

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* In certain portions of the integumentary covering the formation of epithelial scales is more rapid than in others; the primary changes are seen in the papillary layer of the derma—the papillæ are enlarged and more vascular, this hypernutrition effects the growth of cells in the next layer above, the stratum mucosum, and results in their more rapid formation; but the cells are well formed and the secretion which cements the cells together is sufficient to keep them closely adherent. But increase this proliferation beyond the limits of health, either from constant friction or any other irritant and note the result. The vitality of the cells forming the stratum mucosum becomes impaired, and we find either an enlargement of the nucleoli compressing and atrophying the nucleus resulting in death of the cell, the secretion of cement, which in the healthy skin joins the cells together, ceases with the death of the cell; hence the exfoliation upon the surface, of which *Psoriasis* is a type. Or the cells of the rete degenerate into vesicles or pustule, *Eczema.*

A CASE OF

HEMIPLEGIA,

WITH REMARKS ON

Secondary Degeneration of the Pyramidal Tracts.

By PHILIP ZENNER, M. D.,

CINCINNATI, O.

The case of which I am about to speak is a very common one, it is one of ordinary Hemiplegia. Still some special features of interest about it and considerations growing out of them will not, I trust, be altogether uninteresting to you. The history of the case is as follows:

R. G. 50 years of age, 10 years ago had an attack of right hemiplegia, which left a degree of weakness in the right arm and leg. Four weeks ago, (date of writing, March 21st) he had a second attack of hemiplegia on the same side. In both attacks there was doubtless a hemorrhage in the region of the (left) corpus striatum (the ordinary seat of disease in cases of hemiplegia). An examination of the case reveals considerable weakness of the right arm, the same, though less marked, in the right leg. The muscles of the face have almost regained their original tonus. There is a feature to which I wish to call your attention, though I cannot dwell upon it here. The hemiplegia is upon the right side, but there is also a de-

gree of weakness in the left leg, though less than in the right. Brown Sequard, at a meeting of the *Societe de Biologie*, in January of this year, called attention to this condition, that is a weakness on the non-paralyzed side, especially the leg, in some cases of hemiplegia.

There is in our case also a considerable exaggeration of the tendon reflexes (a subject we will speak of immediately) on the non-paralyzed side. I only mention these as interesting features in the case. An attempted explanation would lead beyond the limits of this paper.

We will now examine the tendon reflexes. When I strike the patellar tendon there is a very violent and extensive forward jerk of the foot. On strikng the inner or outer hamstring there is a sudden contraction of the corresponding muscles. When I grasp the point of the foot, and make a sudden dorsal flexion, there ensues a series of movements rythmical in character, consisting of flexions of the foot, which continue as long as I hold the foot in a flexed position. This is called the foot clonus. It is the same in character as the other tendon reflexes. The sudden dorsal flexion acts like a tap on the tendo-Achillis, and the series of clonic contractions is due to a repetition of the same cause.

Let us pause for a moment in the examination of our case, and consider what is the nature of tendon reflexes, and what their clinical significance. I do not wish to enter into any discussion of the theories concerning these reflexes, suffice it to say that practically they all agree in this: that they are due either immediately or mediately to reflex action, that the pathway of that reflex is on the one side through the posterior, on the other through the anterior spinal roots, the center being in the gray matter of the cord, probably in the ganglion cells of the anterior cornua, that furthermore for the inferior extremities the centre is in the lumbar portion of the cord.

Now as to their clinical significance. In health the only one of these reflexes usually found is the patellar tendon reflex, and this is so slight, in most cases, that a slight tap on the ligamentum patellae, which in this case would cause a violent contraction of the quadriceps femoris, would scarcely produce a perceptible movement. As to the diagnostic value of the exaggeration of these reflexes, I will only say that it is found in cases of the large and rather comprehensive group of spastic paralyses. Our case is one of secondary degeneration of the

pyramidal tracts following intra-cerebral lesion, a subclass in the group of spastic paralyses.

One word as to the diagnostic value of one of the above signs, the foot clonus. Of all the phenomena of this kind it is the most valuable in this relation because it is very seldom found in health. Gowers believes that it is always a sign of disease. But in this opinion, I cannot agree with him, as I have found it present in cases where there was no indication of nervous disease. But how seldom it is met with in health, is shown by the fact that Berger on examining 1,400 healthy persons found it only three times. You see then how valuable its presence may be as a sign of certain pathological changes.

But to recur to our case. On examining the arms by tapping upon the tendons of the different muscles, biceps, triceps, etc., we can everywhere elicit the tendon reflexes. In healthy persons tendon reflexes in the superior extremities can very seldom be found. Now, with the mention of the fact that there is no rigidity of the muscles on the paralyzed side, we will dismiss further consideration of this patient, and enter more fully into the discussion of the pathological condition the case illustrates.

Turck was the first to recognize secondary degeneration of nerve bundles in the spinal cord following intra-cerebral lesions. This degeneration he very distinctly located. It is found in two parts: One embracing a narrow band of white fibres on the inner side of the anterior column bordering the anterior fissure. This is always on the same side as the intra-cranial lesion and does not usually extend downward beyond the upper dorsal region of the cord. The other part embraces a broader band of white fibres in the posterior part of the lateral column. It is on the side of the cord opposite to that of the intra-cranial lesion, and usually extends the whole length of the cord. These two bands form together what is termed the pyramidal tract (that is, that part of it which is contained in the cord), and are known to contain the nerve fibres which go to the voluntary muscles.

Secondary contraction of paralyzed muscles in cases of incurable hemiplegia have long been observed, but Bouchard was first to recognize that this muscular rigidity occurs in cases of secondary degeneration of the pyramidal tracts.

What are then the clinical manifestations of secondary degenerations of the pyramidal tracts? They are principally rigidity of the paralyzed muscles and exaggerated

tendon reflexes. The rigidity may become manifest with in the first month after the focal lesion, but usually several months intervene before it appears. The exaggerated tendon reflexes appear, as a rule, much earlier and hence they sometimes acquire a great prognostic value. Charcot very nicely brings out this point in his lectures on secondary degeneration. He puts it: "Suppose you are called to a case of hemiplegia. There has been, as is usual in such cases, a hemorrhage in the region of the corpus striatum. He is completely paralyzed on one side. The question is put to you will he recover, or is the paralysis durable. The answer to this question will depend largely upon whether the internal capsule has been injured or not. If injured in a certain part, there will be subsequent degeneration of the pyramidal tract and durable paralysis. If the internal capsule remains intact, the patient will probably recover, at least in large part, the use of his limbs. You wait a few weeks, you examine the tendon reflexes. They are exaggerated. Then you can say, it is highly probable that the internal capsule has been injured, degeneration of the pyramidal tract has ensued, and the paralysis is incurable. It is so in our case. There are exaggerated tendon reflexes. There is as yet no muscular rigidity, but we know that will later appear. The case is incurable and it is important the patient should know it. He is without means. He wishes to know whether, if he can manage to support himself for a while, he will later be able to earn his own living. No. He will then seek some home for incurables."

How are these symptoms, muscular rigidity and hightened tendon reflexes to be explained. Various thories have been offered, but that of Charcot is so ingenious and so plausible that I will give it here.

It is probable that the nerve fibres of the pyramidal tracts terminate in the ganglion cells of the anterior cornua, and their degeneration therefore causes secondarily certain dynamic changes in these cells, represented by a state of irritation, or exaltation of function. These cells are the seat of reflex power. There are consequently exalted reflexes. Muscular *tonus* is the expression of one mode of spinal reflex activity. With the super-excitability of the center, this *tonus* is hightened and permanent; in other words there is muscular rigidity.

The exaggerated tendon reflexes may be explained in the same way.

We will dismiss further consideration of the clinical manifestations of secondary degenerations, and enter more fully into the subject in its anatomical and physiological bearings.

First let us clearly understand the physiological cause of secondary degeneration of nervous tracts.

Waller, an English physiologist, pointed out more than thirty years ago that section of mixed nerves was followed by degeneration of the peripheral ends of the nerves, that section of the posterior root of the spinal nerves above their ganglia, was followed by degeneration of the central end, which could be traced to Burdach's column. It became apparent that the tracts degenerate when cut off from their trophic centers, that of the anterior roots being in the ganglion cells of the anterior cornua, that of the posterior roots in the ganglia of those roots. The principle has since been formulated as the Wallerian law, that nerve tracts degenerate when separated from their tropic centers.

This law throws a flood of light on the whole subject of secondary degenerations. It enables us to understand, why degeneration of the column of Goll is usually found in locomotor ataxy, why degeneration of the pyramidal tracts follows certain intra-cranial lesions. It further enables us to ascertain new anatomical and physiological relations.

For instance, section of the cord is followed by degeneration of certain tracts of nerve fibres in an ascending direction, by others in a decending direction, through the careful study of which the separate bundles can be distinguished from one another and their trophic centers ascertained.

This leads us to a further consideration of that important nervous tract, the pathological changes of which have been the subject of this paper, the pyramidal tract, to a determination of its course, and the question of its trophic center, the answer to which would solve one of the most interesting problems in cerebral physiology.

For more than a decade of years the effort has been made through experimental investigation to determine the localization of cerebral function. Even before this time Meynert, from his anatomical studies, believed himself justified in locating the motor functions in the anterior cerebral convolutions, and Hughlings Jackson through clinical observations came to similar conclusions.

Later the experiments of Fritsch and Hitzig, Ferrier, Nothnagle, and many others, demonstrated that irritation

or removal of certain definite regions of the cortex, would be followed by certain definite motor phenomena. Since then certain convolutions, the anterior and posterior central, have come to be called motor or psycho-motor centers. And yet the results of these various investigations are by no means conclusive.

As regards the anatomy, the nerve fibres in the internal capsule and *centrum ovale* are so intimately and confusedly blended, that it is impossible to trace any of them with any certainty.

In pathological cases we seldom have that exact circumscription of diseased areas. that would admit absolute conclusions in reference to localization.

Even the results of experiment are not conclusive. Apart from the fact that many still deny the local significance experimenters claim for their experiments, and that results are sometimes conflicting, even when these results are alike the experiments do not always agree in there interpretation. Some, Hitzig, Nothnagel and others, believe the so-called motor centers to be really sensory centers which only indirectly produce motor phenomena; for example that they are the seat of muscular sense (Nothnagle). Others, as Ferrier, believe the same to be really motor centers.

Can the study of secondary degeneration of the pyramidal tract throw any light on this question? The anatomical position of this tract for the greater part of its extent, in the cord, bulb, in the crura cerebri and internal capsule can be easily traced. So far the study of development, as introduced by Flechsig, and of secondary degenerations corroborate purely anatomical investigations. But beyond the internal capsule anatomical investigation cannot trace this bundle. Flechsig has been enabled, by his method, to trace the tract thus far, but, though he believes it has its origin in the so-called motor center, he could trace it no further. Where is the origin of the pyramidal tract? Is it in the central convolutions, and are these therefore its trophic centers? If this question could be answered affirmatively, it would at once settle the physiological point under consideration.

We know the pyramidal tracts contain the voluntary nerve fibres. If then, these fibres have their origin in the central convolutions, these must contain motor centers.

How can this be determined? Again we must refer to the Wellerian law. If the cortex in this part contains its trophic center, then separation from it would be fol-

The following figures are taken from some of the drawings and anatomical sections with which the anatomical part of the subject, the course of the pyramidal tract was demonstrated. Figs. I, II, III and IV are taken from drawings; Figs. V, VI and VII from anatomical sections presented to the society.

Fig. I.

The course of one pyramidal tract is delineated in black. The direct pyramidal fasciculus extends to the dorsal region. The crossed pyramidal fasciculus extends the whole length of the cord, and in the lower part of the medulla crosses over to the other side, and thence the two fasciculi are seen united, passing through the medulla, pons, and crus cerebri.

lowed by degeneration of the tract. Lesions anywhere in the course of this tract, in the internal capsule, crura, &c., will cause degeneration of the fibres below it. Will lesions of the cortex in the region mentioned, also cause its degeneration? and does said cortex therefore contain the commencement of the tract; or, in other words, is it its trophic center? There is some evidence toward the establishment of such a fact. Vulpian and Ferrier have experimentally evoked degeneration of the pyramidal tracts through removal of portions of cortex of central convolutions. Charcot and Pitres, Lepine, Poullain, have published cases in which disease of the central convolutions was followed by degeneration of the pyramidal tracts.

But the evidence is not all favorable. Binswanger, Westphal's assistant at the Charite, recently reported cases of general paralysis of the insane, where, with extensive disease of the cortex in central convolutions, no degeneration of the pyramidal tracts could be observed.

It must be acknowledged that appropriate cases for such study are rare, and observations, to be reliable, most difficult and tedious. It may be, therefore, that not all the conditions have been complied with that make conclusions positive. At least it must be granted that the evidence on this point is not yet conclusive. We can, therefore, as yet, give but a qualified answer to the above question. Probably the trophic centers of the pyramidal tracts are contained in the central convolutions. But even this probability adds to the weight of evidence given by anatomy, pathology, and experiment that the central convolutions contain motor centers. And it promises even more than this. The results are so far not conclusive, because the opportunities for observation have been few; the observatives themselves, perhaps, not the most exact. But from the nature of the proof, if the proper data could be obtained, they would bring with them a certainty in their conclusions, such as purely anatomical, pathological, or experimental investigation could never attain.

The problem, then, like so many others in this department, still waits its definite solution. That solution demands of the worker, patience, application, and critical exactitude of observation; of the seeker after truth who relies upon the observations of others—to watch and wait.

90 WEST NINTH STREET.

A COMPOUND

Dermoid Cyst of the Orbit.

By HENRY G. CORNWELL, M. D.,

COLUMBUS, OHIO.

Miss C., aged 33, residing in a northeastern county of this State, consulted the writer Nov. 12th, 1880. The history of the eye disease from which she was suffering I take from a note kindly furnished by the physician who has been for some years a close observer of the case :

"At the age of sixteen, a slight fullness in the upper and inner angle of the orbit was noticed, which continued to increase slowly in size, so that three years later there was a noticeable protrusion of the globe of the eye in a downward and outward direction. In 1871, six years from the time the swelling first exhibited itself, the conjunctiva of the globe and lids was often inflamed, and the overflow of the tears was quite troublesome. Nothing but domestic remedies were used. In October, 1872, went to Cleveland. Abscess of lachrymal gland diagnosed. A puncture was made beneath the lid, and this kept open about eleven weeks. In February, 1874, she returned to Cleveland. Part of the lachyrmal gland in an atrophied condition was removed. In September, 1876, consulted Prof. S. D. Gross, whose diagnosis was guarded. In the spring of 1877, there was severe pain in and about the eyeball. An abscess pointed and discharged its contents through the upper lid, in the region of the lachrymal gland, being aided by the use of the bistoury. This was

kept discharging during the summer until August. The pus was very much like prune juice in color, but a little thicker in consistency. The probe seemed to impinge upon denuded bone. The pus at no time was offensive. After a few weeks it changed to a yellowish cast; more often was cream-colored. From August, 1877, until you saw the case, there was no discharge. For some months before you saw her, she had headache, circumorbital pain, and pain in the globe, together with opacity of the cornea, and some chemosis."

At the time the lady first consulted me, the following conditions were observed:

Globe of the eye projecting from the orbit in a downward and outward direction. A large oval swelling having regular outlines and smooth surface in the upper and inner angle of the orbit. The eyeball inflamed, with slight pannus and serous chemosis. Pain in and about the eye, photophobia, lachrymation, etc. This condition was due to a want of protection of the eyeball from the air, dust, etc., by the lids, which could not be closed more completely than to cover the margins of the cornea, on account of the exophthalmos. The swelling above the globe was soft and compressible, evidently having its origin deep in the orbit. The history of its slow development, together with its appearance at this time, led me to regard it as a cyst, and since the eyeball was inflamed, and the patient suffering from circumorbital pain and headache, and her health impaired, I advised an operation for her relief; this to be, the removal of the growth, together with an effort to save the globe if possible. To this the patient gave consent, even to the removal of the eyeball, and the operation was done March 19, 1881, in Youngstown, O., with the assistance of several physicians of that city, in the following manner:

The ocular conjunctiva was detached from the inner half of the margin of the cornea, the wound enlarged with the scissors, and the surrounding tissues, by means of the handle of a scalpel, separated into the depths of the orbit. In order to facilitate these latter manipulations a thread was passed through a part of the conjunctiva which was left attached to the globe, and the eyeball by this means drawn out of the orbit and held by an assistant. Perhaps an inch and a half from the orbital margin of the frontal bone the instrument came in contact with the wall of a cyst, which, through efforts to enlarge

the opening in the orbit leading to it, was torn, and a part of its contents evacuated. The perforation was enlarged by means of a scalpel, and the remaining quantity carefully pressed out, and as much of the sac-wall as could be taken up by the forceps was afterwards removed with the scissors. The material discharged from the tumor almost filled a dessert-spoon, was of a brownish-black color, of the consistence of corn meal mush, with rather offensive odor, and made up chiefly of epithelium and fat. The orbital wound was then carefully cleansed with carbolized water and the globe permitted to return to its place, and the edges of the conjunctival wound united by means of sutures. The eyeball still turned outward, due to the lengthened condition of the internal rectus as a result of the stretching it had undergone, and to correct this divergence a tenotomy of the externus was done. This permited the globe to assume its normal position so far within the orbit that the cornea was completely covered by the lids. The patient was directed to remain in bed, and cloths dipped in ice water applied to the eye for twenty-four hours. On the third day after the operation, evidences of orbital cellulitis were exhibited in swelling of the lids, pain around the orbit, a return of the exophthalmos, now in the direction of the axis of the orbit, chemosis of the ocular conjunctiva, etc. Cold applications were made and other active antiphlogistic means were adopted, but in spite of these, three days later the cornea became cloudy at its periphery, and the inflammatory infiltration of the membrane progressed without retardation from any treatment followed, until it became entirely opaque. Panophthalmitis being inevitable, I decided to remove the globe, believing that the activity of the inflammation in the orbit would not be so great following its removal as if it were permitted to be destroyed by the inflammatory process already begun.

This was done March 30, the patient under ether. After staunching the profuse hemorrhage attending the operation, to my surprise a second sac exhibited itself, its location being above and to the upper and inner side of the severed end of the optic nerve. After an incision into what proved to be a thick wall, about a half a teaspoonful of a substance of the same character as the first sac contained was expressed, after the same manner as in the first instance, and a part of the imperfectly defined cyst-wall was excised. My finger in the orbit failed to

detect anything foreign to this cavity. The cellular tissue was much denser than usual as the result of the several attacks of inflammation which had taken place. No evidence of suppurative destruction of a part of the lachrymal gland was exhibited, the pus discharged from a point of the upper and outer angle of the orbit when the patient was in Cleveland, evidently had its origin from the depths of the orbit in the neighborhood of the cyst. After the removal of the globe and the evacuation of the second cyst, the inflammation in the orbit immediately subsided. A week later, while examining the cavity, an oval mass, soft to the touch, was observed in the upper and inner angle of the orbit. The patient was anesthetized and a small incision through the thick wall of a third sac, gave exit to material of the same character as was evacuated in the two former instances. After enlarging the incision, about a third of a teaspoonful was pressed out, and a part of the sac-wall removed with forceps and scissors; this cavity was carefully syringed out with a weak solution of chloride of zinc, and in a few days the patient returned to her home. During the succeeding summer, while in Germany, I received a letter from the Doctor informing me that an abscess had formed in the orbital tissues, and that the pus had burrowed a passage along the roof of the orbit and perforated the upper lid. On examining the case a few months ago, in one or two points the cellular tissue of the orbit was observed to be indurated, but nothing of a cyst character was discovered. The lid was drawn upward and adhered to a point on the orbital margin of the frontal bone. An opening also existed through which a small quantity of pus was at times discharged. The course of the fistula was not accurately determined for want of time, and on account of pain attending the probing, and the patient expressed a desire to visit Columbus for a more careful examination at a later date. This has not thus far been convenient. I reasoned at this time that the remains of the thickened cyst-wall had subsequently excited a cellulitis, the inflammation extending to the periosteum and bone, giving rise to caries of which the discharge and retraction and adhesion of the lid are chief indications.

Dermoid cysts are situated, as a rule, deep in the orbit. In fifty-one of the seventy-three cases collected by Berlin[1] the situation of the sac was: In 27 (53 per cent.) on the nasal side, in 12 (24 per cent.) on the temporal side, 8

(15 per cent.) below, and 4 (7 per cent.) above. In my own case, it will be remembered the cyst was above, the largest of the three sacs toward the temporal side of the orbit.

The point of development of the tumor is probably in the anterior part of the orbit, the sac projecting itself deeper into the orbital cavity (Berlin). It is located external to the ocular muscles, but according to Mackenzie, (Ed. 1855, p. 326) it insinuates itself between them, and through the inflammation it excites contracts adhesions with the globe, the muscles, the optic nerve, periosteum, etc. He notes (*l. c.*) that they are sometimes found within the ocular capsule, but this is probably an error. They are, as a rule, unilocular, but cases exhibiting several sacs are recorded by Barnes,[2] St. Yves,[2] Szokalski,[4] and Schiess-Gemuseus.[5] They slowly enlarge, so as to, in some instances, attain enormous size.

Rosas reports a case in which the sac grew to the size of a goose-egg.[5] In Ingram's case the sac contained a wine-glassful of fluid. They have not been known to penetrate the cranial cavity. Delpech's case, recorded by Mackenzie (*l. c., p. 329*) as a cyst, projected into the brain, where, after tapping, death followed, was undoubtedly an encephalocele. They sometimes degenerate into malignant disease, according to Mackenzie, who records an illustrative case (*l. c., p. 327*).

While solid tumors within the orbit, as a rule, whether malignant or non-malignant, after they have attained large size, cause carious destruction of its walls, this condition does not appear to apply to encysted tumors, for beyond some dilatation of the cavity nothing further has been observed. In general, it may be said that such growths cause less exophthalmos than solid tumors, as they seem to accommodate themselves to the cavity which contains them. They gradually enlarge, and if left to themselves cause death at times through meningitis, etc.

The direction of the exophthalmos manifestly varies with the location of the cyst. The sac-wall is in some cases very thick, in others, almost translucent. The char-

1. *Graefe-Saemisch* Bd., VI., S. 678.
2. *Medico-Chirurgical Transactions.* Vol. IV., p. 316.
3. *Medico-Chirurgical Translations.* Vol. IV.
4. *All. Wiener Med, Zietung,* 1860.
5. *Arch. Ophth.*, XIV., I, p. 73, 1868.
1. *Oestr. Med. Wochenscher.* 1841-2.

acter of the contents of these sacs varies greatly. It may be almost pure oil ("oil-cysts") as in the cases of Verneuil,[1] Hirschberg,[2] Berger,[3] Bull,[4] and others. In 37 of the 73 cases collected by Berlin (*l. c.*), in 19 there was found epithelium and fat, in 9 viscid, honey-like fluid, in 6 hair [Kerst, Ammon, Lasserve, Szokalsky, Watson (2 cases)]; in 2 chalky concretions [St. Yves, Cunier]; in 1 case a tooth was discovered, (Barnes, *Medico-Chirurgical Transactions* Vol. IV., p. 316.)

In 45 cases the time of life at which the cysts were developed was (Berlin):—

In 8, (18 per cent.) the patients were 20 years old and over.

In 37, (82 per cent.) the patients were under 20 years.

Of the 37 cases:

In 16, (35 per cent.) the patients were between 10 and 12 years.

In 17, (38 per cent.) the patients were affected at birth.

Concerning the etiology of encysted tumors of the variety just considered in the orbit, the writer has no opinion to offer. The theory seems to be pretty well established in the minds of ophthalmologists generally that they are formed by an invagination or involution of the external blastodermic membrane during fœtal development. Of the 73 cases collected by Berlin, all but 23 were unmistakably, judging from the character of their contents, dermoid cysts. The fact that so large a number of cases were congenital, the others developing at an early period in life—only 8 of 45 cases exhibiting such a condition after 20 years of age—is one of much importance in favor of such a theory. Wecker differs from this opinion concerning the etiology, and regards them as retention cysts, due to an obstruction (pre-natal) of the follicles of the lid. But against this theory there is the fact, as Berlin has shown after a careful study of the literature of the cases on record, that in no case was any direct or indirect connection between the sac and lids discovered; moreover, the character of the contents of the sacs—oil and epithelium, bunches of hair, teeth, etc., *i e.*, dermoid productions—weighs heavily in favor of the first theory. Of the 23 doubtful cases (doubtful because their contents differed

1. *Trans. Soc. de Chirurgie*, 1876, p. 1206.
2. These *Archives*, VIII., No. 3, p. 372.
3. Kyste huileux de l' orbite. *Bull de la Soc. Chir.* No. 9.
4. *Amer. Journ. Med. Sc's.*, Jan. 1878.

Dr. H. G. Cornwell's case of Cyst of Orbit.

from those of all the others in being thin and watery or synovia-like) according to Berlin, they can be better regarded as dermoid cysts than extra-cranial encephalocele (of which there is but one example on record), or cysts formed (according to Butterlin and others) from enlargement of the orbital bursæ.

FRACTURES OF THE FEMUR,

AND APPLIANCE FOR TREATMENT.

BY G. P. IKIRT, M. D.,

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In the brief consideration of a subject so important, my remarks will of necessity refer to fractures of the Femur in a general way; with special reference to treatment by the use of an appliance combining the convenience of a fracture cot with an adjustable extension.

While it may be true that fractures of the Femur, as compared with the frequency of fractures of other long bones, may be said to be exceptional, it is undoubtedly true that they require exceptional treatment when they do occur; and hence there has been much mechanical ingenuity expended, and, as a result, many appliances devised, and many forms of dressing recommended, for the treatment of fractures of this bone. The ancient Romans, it is said, adhered strictly to the advice of one of their counsellors, who taught, "In time of peace prepare for war." And the same might frequently be practiced with profit by the general practitioner, who not being located near a city or large town, is called hurriedly to the bedside of some unfortunate individual to find his patient suffering from a fractured limb. If the practitioner have the proper appliances at his command, he is prepared to treat his case with some degree of assurance to his patient and justice to himself. Or, not having the proper appliances, if the fracture be of any of the long bones except the Femur, he can easily make suitable appliances and dressings, by the use of which he can treat his case successfully. But on the contrary, if the fracture be of the Femur, especially in the superior

third, fourth or through the neck, and the case be undertaken without suitable appliances, he will likely have a great amount of unnecessary worry over the case, and in the end a deformed limb to his discredit, and, perhaps, a suit for damages; for be it remembered the patient and his friends will make no allowance for their family physician not being prepared with all necessary appliances. Hence, to meet this want, that the general practitioner in the more remote localities may be prepared to treat with credit to himself, with some degree of assurance to his patient, as well as some degree of comfort, this piece of mechanism for the treatment of fracture of the Femur is brought to the notice of the profession.

For whatever be the methods adopted, and the results attained in hospital practice, it is a lamentable fact, that success in the treatment of fracture of this bone in a country practice, appears to be the exception rather than the rule, the result being, too generally, a twisted and shortened limb. The question, then, very naturally arises, Why this deformity, and this shortening? The answer must be: It is owing to some defect in the management of the case, whereby the extending force, if it was sufficient, was not properly maintained; for it would seem but reasonable to conclude, that if the fractured extremities of the bone be properly coaptated and held in position, and the proper amount of extending force applied, and so maintained for the proper length of time, in all ordinary oblique fractures of the shaft of the Femur, there should be little or no shortening. To say the very least, I opine that shortening, even to the extent of three-fourths or four-fifths of an inch (as claimed to be the average), should be the exception instead of the rule. I do not mean to convey the impression that it is possible to treat all oblique fractures of the shaft, so as to entirely prevent shortening, and thus place general practitioners in a position to be liable to prosecution in every instance where shortening does occur. Far from it. But I do desire to be understood as being decidedly of the opinion, that ordinary oblique fractures of this bone, in the ordinary patient, can, many times, be so treated as to prevent shortening, and when impossible to prevent it entirely, it is still possible to prevent its being very great. As a matter of course, in a transverse fracture, which is very seldom met with in adults, but more frequently met with in children, if the parts have been properly placed in apposition, shortening could not occur.

If, however, a fracture is comminuted, more or less deformity and shortening will likely result. While in impacted fracture, when the ends of the fragments are driven the one into the other so firmly that no crepitus can be detected, the limb cannot be restored to its proper length even by traction, and hence shortening will, and must follow, as inevitably as night follows day. In intra-capsular fracture (most commonly met with in elderly people on account of the changes that have taken place, both in the substance and form of the neck,) the above remarks, with reference to shortening, are also applicable; but the extent of shortening will depend upon the condition of the capsule. If the capsule be not ruptured, the shortening can only be to the extent of the width of the bone, while, if it be torn, the shortening may, and will probably, be much greater, as the fractured end of the lower fragment will usually escape through the ruptured capsule.

Just at this point it may be proper to remark, that the diagnosis of fracture of the neck of the Femur may be, and often is, attended with considerable difficulty. In an article in the Chicago *Medical Journal and Examiner*, contributed by Dr. Lagorio, an Italian Surgeon, the writer refers to a pathognomonic symptom very little known in fracture of the neck of the femur. He says: "It is a traditional practice in his hospital to explore, whenever the fracture is suspected, the small space that is found between the trochanter and the crest of the ilium. In placing the extremities in the same position, instead of the considerable resistance given in a sound limb by the tension of the tensor femoris vaginæ and of the gluteus medius, a deep hollowness is found in the affected limb, due certainly to the diminished tension of the above named muscles by the approximation of their points of attachment."

To prevent or overcome shortening, the extending power should be applied as soon after the injury as practicable. Indeed, *no shortening is to be allowed*, is the safest motto, and the surgeon should constantly be on the alert to reduce it to the minimum, or prevent it entirely, if the fracture be in the shaft and not impacted. In measuring the length of a broken limb, as compared with its fellow (the patient lying upon his back with limbs extended), the tape line should be stretched from the umbilicus to the plane of the bottom of the foot of the sound limb, and then from the same point to the plane of the foot on the injured limb, and when these two lines cor-

respond there can be no difference in the length of the limbs. This will give a much more accurate measurement than to measure from the crest of each ilium to the inner border of each patella; and it is not strange that it should, when we reflect that there may be considerable difference in these two points on the pelvis, owing to distortion, and yet not be noticeable. It is quite probable this distortion has proved deceptive in many instances to both patient and attendant.

In the treatment of all fractures of the femur, it would then seem that there are *four great indications* to be met, and hence *four separate and important duties* devolving upon the surgeon in charge, viz:

1st. To *adjust* the fragments with *care* and *precision*.

2d. To apply the *proper amount* of extending force, and *maintain it continuously* the proper length of time.

3d. By *proper* dressing to *prevent flexure* at the seat of injury or *rotation*.

4th. *To provide every comfort possible* for his patient, in order that his general health may not suffer.

I will now describe briefly the appliance I have used and recommend, together with plan of construction of the same, and leave others to judge as to whether it fills the requirements to a degree worthy of confidence. The frame work should resemble very much that of an ordinary stretcher, two side rails being required, about seven feet long and two inches square. The cross-bar, at the foot, should also be two inches square and two and one-half feet long, and be mortised into the side rails five inches from the ends (so as to leave handles to facilitate lifting). The cross-bar for the head should be ten inches longer than that for the foot, and the side rails mortised into it five inches from each end (so as to leave handles). The inner edge of the side rails should then be slightly rounded off, so as not to cut the canvas. Over this frame No. 10 or 12 duck or sail cloth should be tightly stretched and firmly tacked down on the outer edge of the frame. At the proper place an opening should then be made in the canvas by cutting a slit about seven inches long, and the freed edges should be firmly pulled apart and sewed down upon the under side of the canvas, with pieces of strong material sewed on at upper and lower part of opening to prevent stretching when the weight of the patient comes upon the canvas. A block, dovetailed, is then firmly attached near the head, and another near the foot, on the outside of each side rail, and into these

blocks is firmly fitted a piece of sufficient length to reach from the upper to the lower block. This part should be hard wood, and should be heavy in the center, and taper to each extremity. The inner side should be cut out in the segment of a circle, so that at the centre it will not come in contact with the side rail by three-fourths of an inch, although it rests solidly against it, and also against the blocks, at each extremity. A bolt of sufficient length is then passed through the center of both side rail and side piece, with the burr on the outside, which may be tightened from time to time, should the canvas stretch, without disturbing the patient, and thus bagging or sinking of the center of the cot is prevented, and a firm bed secured, a matter of no little importance, and gravely so if the fracture be in upper portion of the bone. The extension apparatus (which is adjustable) is constructed as follows, inch lumber being sufficient: One piece fourteen inches long and two and one-half inches in width is set in and securely nailed to the edge (at the center) of a piece eighteen inches long and four inches wide—the former piece standing perpendicular to the latter. The piece last mentioned, is cut out in the center, so as to form a slot about four inches long, to admit of lateral motion when required, after being bolted to the cross-bar on the foot of the cot, by simply slacking the burr. The perpendicular piece, which should stand about eleven inches high from its base, is then also cut out in the centre to form a slot seven inches long (running within one inch of the top), and wide enough to allow the wheel in the pulley-block to enter and slide up and down with ease when required. A thin strip, two inches wide and twelve inches long, is then nailed on each edge of the perpendicular block (flush with its face), and another piece one inch thick and ten inches long, and the same width as the upright, containing the pulley-wheel (an ordinary window-sash pulley set one inch from the top) is dropped in on the outside between the two side strips. This block, containing the wheel, has also a slot six or seven inches long and cut out at the bottom to allow the block to slide up or down upon the bolt, (which is merely inserted to hold the two blocks together) by simply slackening the burr. This bolt passes through the perpendicular block two inches from its base. The legs are simply attached by hinges to the underside of the long side-rails, ten or twelve inches from the end. They should be as wide as the side-rail, but thin, so as to fold close beneath

the rail; should also be provided with hooks and screw eyes to render them secure when supporting the weight of the patient. They should be of the proper length to admit of an ordinary vessel being slipped under the cot when required. The whole apparatus, when complete, is strong and very light, as it should all be constructed of pine except the two long side pieces attached to the side-rails; these should be hard wood, as they are designed to spring the side-rails and thus prevent sinking of the canvas. When required for use it is simply laid upon any ordinary bed with a low foot-board. The fractured extremities having been coaptated, the patient is laid upon it.

The fragments may be retained in position by any form of splint or dressing the surgeon may see proper to adopt; for my part I prefer to use Johnson's improved Aul's splints on account of their combining lightness, firmness and porosity. The strips of adhesive plaster (a laced gaiter should never be used, much less the handkerchief) are then applied to the limb, previously shaven; starting at a point on the outer aspect of the limb, just below the prominence of the head of the fibula, carrying the strip across the posterior aspect of the limb, above the swell of the calf, across the lower part of the popliteal region, to the inner aspect of the limb (in a slightly descending direction); thence downward and forward across the anterior aspect; thence downward across the outer aspect to the posterior aspect of limb (below the swell of the calf); thence upward to the inner aspect of limb, and terminating over the internal malleolus. The other strip should be applied, commencing at the inner aspect of limb below the prominence of the head of the tibia, carried across the posterior part of limb (above the swell of the calf) to the outer aspect; thence descending to anterior, thence to inner, thence to posterior, thence to outer aspect (below the swell of the calf), and terminate over the external malleolus. It will thus be seen that a firm hold is obtained upon the limb, slipping being impossible, and besides being neat, occasions no discomfort to the patient. Adhesive strips, one and a half inches wide, are sufficient on an ordinary limb.

The free lower ends should then be passed through holes near the end of a block four or five inches long (so as not to make pressure on the malleoluses) at the bottom of the foot and firmly tied. A hole in the center of the block admits the end of a piece of rope on which a knot is then firmly tied, and the free end passed over

the pulley wheel. The weight is then attached as heavy as required. A roller bandage should then be applied from the extremity of the limb to a point above the knee. If Aul's splints be employed a bandage to the limb under them at the seat of fracture is not required, as it is not necessary and not good surgery; but some other splint may require it, and hence it may be necessary.

As all pressure is taken off the heel by raising the block, containing the wheel, sufficiently high to enable the heel to swing clear of the cot, it will be necessary to prevent rotary motion of limb by use of sand bags or cushions of some form, and sometimes to support the knee by a cushion underneath it. The extension is then adjusted laterally, so as to have the limb exactly in the proper position, and if the fragments have been properly adjusted the patient will rest comfortably. No perineal band, long counter extension splint or other harassing apparatus is required, as the weight of the body is usually sufficient for counter extension. If, however, more is required, the weight at the end of the rope should be increased, and the foot of the bed elevated.

When it is desirable to change the bed linen, or patient wishes to evacuate the bowels, the cot is simply raised (in such a manner as to keep the patient level), the legs dropped to their respective places and hooked, and the vessel slipped under the opening in the canvas—all done in a moment, without disturbing the extending weight, without any jar to the limb or risk to the patient. But still another advantage arises from the fact that in hot weather the patient can remain for hours in this elevated position, and thus a free circulation of air underneath and around him is secured, which affords rest and comfort in no small degree to a patient who is otherwise compelled to lay on one spot for weeks.

The brief history of a case may be of interest at this point: The patient, aged sixty, and weighing about 180 pounds, had the femur of his right leg fractured, in two places, by a runaway accident. A fracture nearly transverse just above the knee, with severe contusion of the joint, and an oblique fracture, extending from above downwards, and from behind forwards, at the junction of upper with middle third, also severe contusion in groin. The accident occurred during the hot weather, in August. Saw patient, and reduced fractures in about an hour after injuries were received. Was treated as indi-

cated above, and in six weeks was so far recovered as to be able to exchange cot for invalid chair. Was in excellent spirits, with general health as good as when accident occurred. When patient was able to leave his cot the most careful measurement showed no shortening.

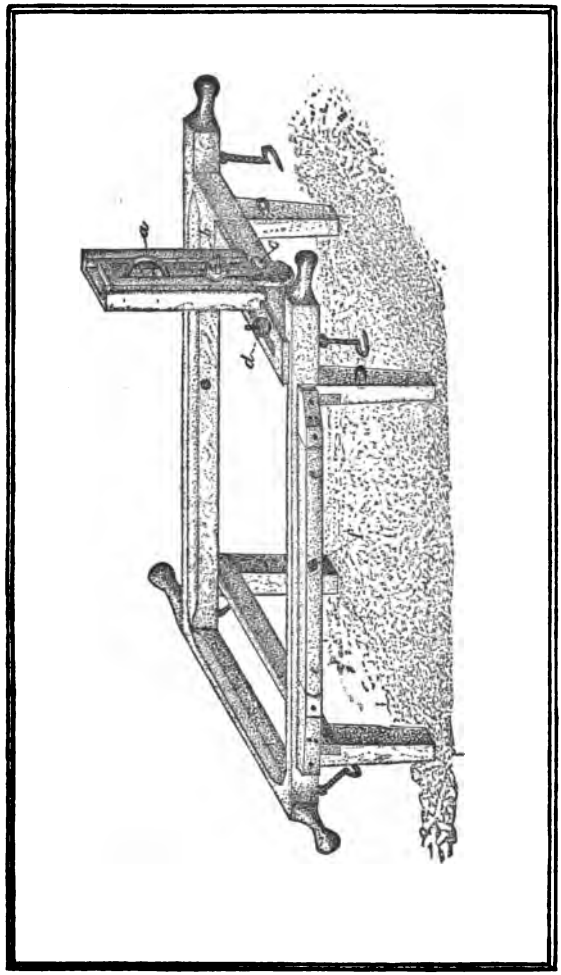
When I bring this appliance before the profession of to-day, I do so knowing full well that it is only after the lapse of some time, that the true value of a remedy or appliance can be ascertained. When first introduced to notice, those who have faith in it are apt to use it on every possible occasion, too often rashly and unwisely; whilst those who do not comprehend or appreciate it, or who have seen its bad results, when improperly applied, or who expect too much from a mere machine or appliance, are inclined to deny its value altogether.

Presumably the man who first discovers a really valuable remedy or surgical appliance, and whose intuitive skill may save him from some of the mistakes of his less-gifted brethren, it is not so competent to judge how far it is likely to be successful in general practice, or of seeing the dangers which may attend its careless use, as some other professional brother who has had more years of experience or enjoyed a wider range of observation. However, I think the appliance above described will be found to possess the following virtues when properly comprehended and used:

1. Its simplicity and trifling cost.
2. One will last a lifetime, and may also do good service as a stretcher or a water-bed.
3. The limb can be kept in line without pressure from long splints.
4. The extending force is always uniform, the extension weight being out of harm's way.
5. The calls of nature do not require the patient to change position at the risk of the limb.
6. The patient suffers from no undue pressure in any part, is comfortable, and his general health suffers but little.
7. No counter extension apparatus is required.
8. All pressure is taken off the heel.
9. But little anxiety to the surgeon, and little risk to his reputation.

In conclusion, will simply add, that this Fracture Cot, with its extension attachment, is not introduced to the notice of the profession as a piece of mechanism based upon theory alone, as the case described above is designed

to show. But having demonstrated its efficiency to my satisfaction, I now submit it to the profession at large, trusting it may merit confidence to the extent of a fair and impartial trial. And if any professional brother, by its use, is enabled to obtain better results than he has heretofore by means of other appliances, or by its use to render an unfortunate suffering fellow-mortal more comfortable, my object will be accomplished, and my effort will not have been in vain.



FRAME OF FRACTURE COT.

a, Pulley for weight extension; *b*, thumb-screw for controlling height of moveable block containing *a*; *c*, loop for finger in moving the block; *d*, thumb-screw for regulating lateral position of the extension apparatus; *e e*, ends of hard wood side-bar, which is, at its middle, separated by an interval of ¾ in. from the main side-bar to which the canvas is to be attached. (This space is not well shown in the cut.) *f*, bolt for approximating these two side-bars so as to stretch the canvas.

TREATMENT OF

Some of the More Common Forms of

Inflammation of the Knee Joint.

BY E. B. PRATT, M. D.,

MT. STERLING, OHIO.

GENTLEMEN:—In the discussion of this subject, I do not expect to present anything new, nothing more, perhaps, than every one familiar with the teachings and literature of the profession for the last decade or two, has already become acquainted with. The object of the paper is to place at the disposal of members of this Society, in a compact and convenient form, a method of treatment for a most serious lesion, which, I am well convinced, promises more satisfactory results than can be obtained from the methods enjoined in such works upon surgery as are usually found in the libraries of general practitioners of medicine in this section of our country.

For convenience in manipulating the subject, I will observe the time-honored custom in the classification of inflammation, and divide that peculiar to the knee into acute, sub-acute, and chronic. Specific might be added, but it is not the intention to devote any portion of this paper to the discussion of treatment, especially designed for conditions predicated upon gonorrheal lymphatism, or such constitutional vices as rheumatism and syphilis; for I am well satisfied that a professional want, so to speak, will

be much more efficiently met by confining it to the discussion of such measures as will be appropriate for the more common form of inflammation usually described as synovitis.

In the acute form of the disease, with the knee red and swollen, hot and painful, the result, probably, of a cut with a corn-knife, a sudden and powerful wrench in wrestling, or a severe fall upon some hard substance, as the frozen ground, the measures of treatment naturally suggested are, rest, absolute in its character, and all other means, known to our art, for combatting inflammation, such as the local abstraction of blood, pressure, application of cold, and the like.

The first, and most important factor, rest, may be secured in a limited degree, by placing the limb on pillows, by the use of plaster-paris bandages, and splints of various kinds, but these methods all fall short of the requirements of the case, and are, in consequence, in a corresponding degree, valueless.

In order that the part may be placed perfectly at rest, it is necessary that the irritable contractions of the muscles surrounding the inflamed joint should be overcome, and this can be accomplished in a much more satisfactory manner by extension, than by any other means at our disposal.

The most convenient method for making extension, in acute cases, is by means of an appliance familiarly known as Buck's apparatus, a full description of which, as devised and used by that gifted surgeon, can be found on page 49, vol. 2, New York Medical Record.

At the risk of being tedious, I will describe so much of the appliance as is necessary to our purpose: This will include two strips of Maw's mole-skin plaster, from 2½ to 4 inches in width, and of sufficient length to reach from the ankle to a point just below the knee; a piece of rubber webbing, such as is used by shoemakers, ten inches in length, and two inches in width, securely fastened to the end of the adhesive strap, which will occupy the inner side of the leg; a buckle of sufficient capacity to accommodate the rubber webbing, sewed to the end of the strap which is to be placed on the outer aspect of the limb; a thin block of wood, 3 inches in its vertical, and 3½ inches in its transverse diameter, cut down on each side, ¼ of an inch from its ends, to the depth of ¼ of an inch, so as to form a notch for the reception of the rubber webbing; a pulley post, with a foot or floor piece, to be fastened to

the floor with screws, through carpet, if necessary; a pulley screwed into the post at the requisite height; a sack that will contain 20 lbs of shot, fitted with a tube at the top to facilitate filling, and a double-valved shot-gun charger at the bottom to secure easy removal of the shot; cord, to suspend the extending force from the foot of the patient over the pulley, and a padded inclined plane to be placed under the limb.

The leg having been neatly shaved, cleaned, and wiped perfectly dry, is next straightened: this can be accomplished with so little pain to the patient, by grasping the tibia from the under side of the leg, and gradually making extension, while an assistant makes counter extension, by grasping the thigh, just above the knee, that the use of an anesthetic can, in most instances, be dispensed with. The limb having been straightened, the adhesive straps are next smoothly applied to the sides of the leg, from the ankle to a point just below the knee, and secured in position by a roller, snugly adjusted from the toes upwards, leaving the rubber webbing and buckle, previously fastened to the lower ends of the adhesive straps, free; the pulley post being secured to the floor at the foot of the bed, the inclined plane, in position, under the limb, and a rubber sheet upon the bed, under the patient, for purposes of protection, we take the rubber webbing, pass it around the block of wood, through a strong loop, with which the block has been previously provided, to the opposite side of the leg, and secure it in the buckle; the cord is then fastened to the loop on the block of wood, passed over the pulley, secured to the sack containing a known quantity of shot, and the latter let gently down until its entire weight is drawing upon the limb.

The number of pounds constituting our extending force will now be determined by the sensations of the patient; it will be greater in some instances than in others, and greater, also, at different times in the same case, but should *never* be greater than is just sufficient to overcome the irritable contractions of the muscles surrounding the inflamed joint. Attention to this point will obviate injurious stretching of the ligamentous structures operated upon by our extending force.

In this connection, the convenience of the shotgun charger, for the removal of shot from the sack, becomes apparent; such chargers are estimated to hold from one to one and one-quarter ounces; so, if we are careful to

note the number of ounces that may be at any time withdrawn, and substracting their combined weight from the number of pounds contained in the sack previous to such removal, we will, at all times, be informed of the exact weight constituting our extending force; an item of the very greatest importance.

In further illustration of the convenience and utility of this particular factor in the make-up of the apparatus, it may be added that in thus removing, ounce by ounce, the excess of weight in our extending force, we will always know just when to suspend the process, for the removal of the last ounce of excess will break the strain, of undue traction, on the suffering limb, and re-establish a proper relationship between the force employed and the sensations of the patient. It is needless to add that the foot of the bed should be elevated 5 or 6 inches from the floor, so that the person of the patient may act as a counter extending force.

The block of wood and the rubber webbing, entering into the construction of the appliance, each has a distinct mission to discharge; the first protecting the malleoli from being injuriously pressed upon by the adhesive straps, while the latter, by its elasticity, in some degree obviates the danger of excessive traction; then, occupying a position, as it does, between the diseased point, and the extending force, it will modify, and, to a great extent, neutralize, the effect of any shock that may be communicated to the limb by some object coming, accidentally, in contact with the sack of shot; thus saving the patient very great pain.

It is claimed that extension separates the articular surfaces of the diseased point from each other, and thus gives nature a chance to effect a cure. I am fully persuaded, however, that this statement does not embody the true method in which its benign influence is exerted; indeed, I am well satisfied that the continuous application of an extending force sufficiently powerful to withhold the articular surfaces from each other, would result disastrously to the ligamentous structure of the point.

A true interpretation, then, of its value as a method of treatment in such cases, will be found, I think, in the fact that it places the limb in a proper position, by overcoming the flexion due to irritable contraction of the biceps; that it secures perfect rest to the inflamed joint; that it relieves muscular spasm, which is the chief factor in producing the agonizing pain almost invariably pres-

ent, especially at night; that it diminishes the quantity of blood circulating in the diseased structure by elongation of the blood-vessels, thus reducing their capacity to carry blood; that it constitutes a valuable aid to, and greatly enhances the effect of, pressure artificially applied, by drawing the integument tightly around the limb in the transverse diameter of the joint; that it obviates the injurious effects, and loss of substance, due to the forcible and continuous drawing together of the head of the tibia, and external condyle of the femur; and finally, that when judiciously applied, it affords as much, if not more, comfort to the suffering patient than any other means at our command.

Although the patient has been situated so as to receive all the benefits that are to be expected from one of the most powerful measures of treatment at our disposal, we are not, therefore, to neglect other, and efficient methods that have already been mentioned. So if there is much redness present, we are to resort to such measures as will rapidly diminish the excess of blood already in the part, and if possible so modify the supply as to prevent further hyperemia. In the first place, we are to abstract blood locally by means of leeches, or cups, or what is infinitely better, by making numerous small incisions in the long axis of the joint, so as to secure pretty free bleeding from the severed vessels. In the second place, we may endeavor to limit the supply of blood to the joint, by placing a sponge, or other soft compress, about as long and thick as the thumb, over the femoral artery, in its superficial situation above the knee, and securing it in position by a roller carried from below upwards over it; by thus obstructing the outward tide of the circulation, it is possible to diminish the supply of blood to the crippled knee.

If the joint is unduly hot, a third factor in the treatment, the application of cold, should be brought into requisition, and as there will, doubtless, be infiltration and swelling present, as well as heat, a fourth factor, pressure, can very appropriately be added. The conjoined application of both cold and pressure, is most efficiently accomplished by surrounding the joint with sponges, previously wetted, and squeezed as dry as possible; quite a large sponge should occupy the popliteal space to prevent constriction of the vessels, and cutting with the roller, which is to be carried from below the joint upwards over the sponges in position around the

knee, and the compress likewise, which has already been placed over the femoral artery, thus securing the whole mass firmly to the limb. A drip of cold water is now to be established upon the part, and as the sponges fill they increase in size, while the bandage as it becomes wetted diminishes in length, in other words, shrinks, and is rendered less yielding than when dry. The swelling sponges, and shrinking bandage, are elements capable of developing a considerable degree of force, and as the sponge, the factor chiefly concerned in the evolution of the force, is next to the swollen limb, while the bandage, strong and unyielding, and situated externally, is the chief point of resistance, it becomes obvious that whatever force is exerted must be in the direction that offers the least opposition; hence we are enabled to direct a very considerable degree of pressure upon the inflamed joint.

If thought advisable, such medicaments as hydrochlorate of ammonia, alcohol, and tincture of opium, can be added, in appropriate quantities, to the douche. The measures of local treatment which have, already, been indicated, in connection with those of a general character to be mentioned further along, will, usually, be sufficient to subdue the acute stage of the inflammation.

If, however, it should be indisposed to yield, and there is reason to suspect erosion of the cartilages, we should at once resort to the use of the actual cautery. A white heat should always be used, and the cauterizing iron applied quickly and firmly in the long axis of the limb, so that when the eschars heal, the joint will be constricted in its short axis. With reference to the number of points around the joint to which the cautery should be applied at one sitting, authorities differ; for while Sayre recommends that not more than one-fourth of an inch should intervene between each burn, Barnwell advises that only four should be made in all, one each, on the anterior and posterior aspects of the joint, and one on each side; we should not, however, be bound by either suggestion, but exercise our best judgment in each individual case. The simple water dressing may be applied after the cauterization; or, if pressure should be indicated, sponges can be strapped around the joint, and saturated with water. If one burning does not prove sufficient, the cautery may be used again, and repeated until the desired result is obtained. After the inflammatory stage has subsided, artificial support should be applied to the limb, so that the patient can take exercise in the open

air, and in this way improve the general health, which has always suffered in a greater or less degree.

Adequate support is most advantageously given with Sayre's knee-splint, and a brief description of the method of its application may not be out of place in this connection:

The limb is prepared for the reception of the instrument, by the thorough removal of all hair, dirt, and greasy accumulations; after which, strips of Maw's moleskin plaster, one inch in width, and long enough to reach from just below the knee nearly down to the ankle, and from just above the articulation several inches upwards upon the thigh, provided at one end with a loop made of strong webbing, such as is used by shoemakers for boot-straps, are evenly applied around the limb, longitudinally, about one inch apart, and secured in position by a roller applied from the loops below, to the upper end of the straps on the leg, and from the lower end of the straps upon the thigh to the loops above. In applying the roller, the joint is to be left free, and at least twenty-four hours should intervene between the adjustment of the adhesive straps and the application of the instrument, so that the plaster may become thoroughly adherent to the integument, and thus obviate slipping when the instrument is applied. The instrument, reduced to its minimum length, is now placed in position on the limb, by slipping each lateral half of its two collars through the loops on the ends of the adhesive straps, and locking them; then the connecting rods are to be extended until the articular surfaces of the femur and tibia are so far separated that pressure can be made on the bottom of the foot without causing pain. A roller is now applied over the foot and leg, as far up as the lower end of the instrument, to prevent edema. The knee should also be bandaged, and, if thought necessary, sponges can be applied, and kept saturated with water, as has already been described. The instrument must be worn until the weight of the body can be borne upon the limb without pain in walking when it is left off, and for a considerable length of time thereafter, lest there be a relapse. It should be taken off at night, and an extending weight used in place of it; all that will be needed for, conveniently, making the change being an extra collar to pass through the loops on the lower part of the leg, to which a strip of rubber webbing, or even a strong cord, can be attached, thus forming a loop beneath the foot, from which an extending weight

can be carried over a pulley, adjusted to the foot rail of the bedstead. The collar can be constructed of hoop iron, and any smith can make one with a hinge in its middle, and a lock to secure its free ends when applied to the limb.

The management of effusions within the cavity of the joint is another factor in the treatment of these inflammations that deserves the most careful consideration. I have thus far refrained from alluding to it, in order that I might assign it a separate place in my paper, and give due prominence to the subject of aspiration of the joint, which has been so strongly advocated, within the last few years, as a remedial measure.

Although resorption of the effused material will occur, after a time, through the restorative efforts of nature, the effects of pressure and the cautery, still I am well persuaded that the process can be greatly expedited by the removal, at the *proper time*, of a portion, or the whole, of the effused fluid with the aspirator.

While aspiration of the knee has been prominently before the profession in this country for several years past, chiefly, and at first, through the efforts of Dr. H. O. Marcy, and latterly of Dr. W. P. Judkins, it seems as though the professional mind is still in a condition of great confusion respecting both its value as a remedial measure, and a proper time for its application as such.

There are some who seem inclined to rely almost exclusively upon the method, as a means of treatment, claiming that it relieves pain with miraculous promptness, and meets all other indications in a most satisfactory manner; while others regard it with suspicion, and would not employ it at all, except as a *dernier ressort.*

By some, it is claimed that it should be resorted to only for the evacuation of purulent collections; while others, very properly, maintain that its chief value depends upon its convenience in the removal of superabundant synovial fluid, for the purpose of giving the hitherto distended joint an opportunity to take on healthy action.

Amid all this confusion of opinion, I am well persuaded that its true status as a remedial measure can be formulated, very much, as follows:

First, then—In view of the bare possibility that its use might result in injury to the structures of the joint, which would prove the starting point to grave degenerative changes, I think it fair to assume that it should never be

resorted to simply for the relief of pain, unless such relief cannot be obtained by means of extension and the proper use of anodynes.

Secondly—Repeated aspirations throughout the entire course of the acute stage of the inflammation are to be avoided, because the effusion is only a result, and not the cause of the diseased action; then, it is abundantly proven by clinical experience that there will be reaccumulations of the synovial fluid just as long as the active stage of the inflammation continues, no matter how frequently removed; furthermore, I am well convinced that the duration of the acute stage will not be much, if any, shorter, if treated by aspiration, than when treated by extension, and the other measures already indicated.

Thirdly—It should not, for obvious reasons, be resorted to for the removal of pus, in any instance where the presence of detached fragments of necrosed cartilage or bone is suspected; nothing but free incision will answer under such circumstances.

Fourthly—As has been previously indicated, when resorted to at the *proper time*, it becomes an invaluable aid in treatment, and the proper time for its employment is, I think, after the acute stage of the inflammatory process begins to subside—probably during the fourth week—and it becomes desirable to get rid of the superabundant fluid which is distending the joint; then as the introduction of the needle into the cavity of the joint will be, in the vast majority of instances, an innocuous procedure, and as the accumulation of fluid will not, in all probability, recur, we may greatly expedite the cure by aspiration, and we should resort to it without hesitation.

It may, also, be resorted to, with propriety, for the removal of purulent collections in cases where the integrity of the cartilaginous structure of the joint has not been disturbed.

With the above measures of local treatment faithfully carried out, in conjunction with such measures of general treatment as will be indicated in each individual case, a cure will be effected in a very flattering percentage of all recent cases. Measures of general treatment indicated in the acute stage are such as will restrict the inflammatory process and cut it short, subdue pain and irritability, secure the greatest possible amount of comfort for the patient, and, above all, prevent suppuration.

It has been well said, that if there is any phase of inflammatory disease that really calls for antiphlogistic measures of treatment, it will be found in those cases whose truly local character involves injury, only, to a circumscribed space, and in which the restorative processes of nature will not be injuriously reacted upon by agents that may have a tendency to lower the general force of the system. Hence, such agents as the salines, antimony, veratrum, and the like, may, very appropriately, be used in the early stage of inflammation of the knee joint, for the purpose of sedating the circulation, and limiting the inflammatory process. Still, we must keep in view that grand principle of conservation of the life forces which should underlie all our therapy, and be, constantly, careful not to incur the risk of pushing our depletory measures too far.

If thought expedient, the patient's bowels may be thoroughly moved by a saline cathartic, after which an appropriate dose of veratrum, combined with just enough of morphia to obviate its nauseating properties, may be given at proper intervals, until the pulse becomes less frequent, and a moist condition of the skin is induced, after which, if necessary, it can be continued in a lessened dose, and at longer intervals of time. Anodynes are to be used in such quantities as will meet the requirements of each individual case. Tully's powder meets the indications in an admirable manner, and that, or deodorized tincture of opium, can be used to the extent of securing the relief desired.

If, in spite of all the measures of treatment brought into requisition, suppuration is likely to occur, quinia is indicated for its effect in preventing, and limiting, the formation of pus, and should be given in doses of five or ten grains, every four hours, until the crisis is past; the smaller dose will usually be sufficient.

Supporting and tonic measures are to be resorted to whenever the condition of the patient demands their use, and will consist of the simple bitters, such as tincture of calumba, in combination with hydrochloric acid, preparations of iron, stimulants when indicated and proper alimentation.

In case suppuration does occur, the pus should be evacuated, as soon as formed, by the aspirator, if there be no reason to suspect violation of the integrity of the joint; otherwise it should be done by a *free* incision, so that the pus will be perfectly evacuated, and the dangers arising from

such matter undergoing decomposition in a cavity from which it cannot escape, obviated.

The sub-acute form of inflammation of the knee joint demands the same measures of treatment as the acute, but they need not be so vigorously pushed. Indeed, the use of Sayre's extending apparatus in conjunction with the absorbent effects of iodine, dissolved in fl. ext. of belladona by means of iodide of potassium, and pressure exerted upon the joint with the rubber bandage, not too tightly applied, will be, in all probability, sufficient to effect a cure. If there should be reason to suspect the presence of an abnormal amount of fluid in the cavity of the joint, its removal should be attempted by aspiration.

I have reason to believe that an aspiration made under such circumstances may do good, whether fluid is obtained or not. I remember one case, as long ago as 1870, in which, after years of enlargement and tenderness, a speedy and permanent cure followed an exploration of the cavity of the joint that I made with a large and long hypodermic needle, in search of fluid which was not present.

Chronic inflammation of the knee joint calls for extension, the use of the cautery, pressure, evacuation of pus when present, removal of necrosed cartilage and bone, opening up of sinuses, if there be any, establishment of drains, with proper tubes or setons of oakum, drawn clear through the joint, if necessary for the thorough removal of pus, securing anchylosis, in a proper position—the straight—if a movable articulation cannot be preserved, and lastly, if all other means fail, excision or amputation.

Excision, if successful, secures the best results for the patient, for the natural limb, although it be straight and stiff, and somewhat short, is far more useful than any kind of artificial appliance. But the risk incurred to life, in case excision is practiced, is much greater than if amputation be resorted to; hence the much greater frequency of the latter operation.

Just here I will leave the subject, and suggest that, as far as excisions and amputations are concerned, it will be found most comprehensively dealt with in the third vol. of Holmes' Americanized Surgery. An abstract from the Dublin Journal of Medical Science, for February, 1882, can be found on page 405, vol. 21, New York Medical Record, in which is recorded the valuable experience of Mr. Hayes, during the last ten years, in 14 cases of excision of the knee joint, along with his method of operating and putting up the limb. In eleven of these cases there was recovery with useful limbs, in three secondary amputations

with two deaths. It is not stated whether the patients were adults or juveniles.

While speaking upon the subject of opening the cavity of the joint, I omitted making any mention of medicated injections, or of Listerism, so-called. The first are more frequently mischievous than beneficial, unless the greatest circumspection be used in their employment; with respect to the last, due regard to cleanliness will probably secure all the advantages that are claimed for the more complicated procedure.

In conclusion, I will say that the measures of local treatment decribed are applicable to all forms of inflammation of the knee joint, specific or otherwise.

DISCUSSION.

Dr. J. H. Pooley strongly recommended irrigation by cold water through rubber tubing. Thought pain from effusion an indication for aspiration. For pressure, preferred adhesive straps. Proper classification would be into those cases involving the synovial membrane, and those affecting the bone. The latter are generally tubercular, and essentially chronic. Should be treated by plaster-of-Paris splint; put a thick sole on foot of sound limb, furnish the patient with crutches, and make him exercise. Amputation is safer and better than excision. It is not true that any sort of a leg is better than an artificial one.

Dr. J. W. Hamilton thought aspiration might be regarded as a curative measure, in acute synovitis, and related a case. Irrigation by tubing is efficient, but laborious and requiring attention. Advised extension to overcome flexion, and fixation by plaster.

Dr. G. W. Garrison, while sanctioning all that had been said, recommended *hot* water to reduce the inflammatory action.

Dr. W. H. Mussey preferred Day's posterior splint. Leave joint exposed, and apply cold water or leeches. Aspirate, or open the joint by a valvular incision. If the limb is to be elevated, the surgeon must remember to slightly flex the leg, or else the joint will be pinched.

TRICHINA SPIRALIS.

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The subject of Trichiniasis, or Trichinous Disease, is one to which my attention has been recently turned, from the fact that a few days ago a large piece of smoked ham was brought to my office for microscopical examination, being supposed to contain the germs of this terrible disease.

For a long time there were many who were so incredulous as to doubt the existence of the parasite commonly known as "Trichina Spiralis," and some went even so far as to assert that it was not susceptible of proof, and therefore should be regarded only as a delusion or a myth.

Let us see what science has to say in regard to this matter, for it is to her we should invariably turn when such weighty problems are to be solved.

There are several varieties of parasites which infest the human body, all of which are susceptible of classification. These parasites not only find their way into the body soon after birth, but are found even in the fetus in utero. No less than five species of vermes inhabit the alimentary canal alone. Many species crawl upon the skin, and hide in its hairy covering, or burrow and propagate in the cutis vera, or cellular tissue. These are called Epizoa. All the organs of the body, such as the brain, heart, lungs, liver, spleen, kidneys, bladder, and the eye even, have each its particular species of parasites. These form the other grand division, commonly known as Entozoa. Belonging to this latter division, there is still another species of parasite, which is a much more deadly foe to man than any, or, perhaps, all those mentioned; I refer to the Trichina Spiralis, which forms the subject of this paper.

is parasite was first discovered in the year 1832, but
ıot scientifically described until 1835, when Professor
., the eminent zoologist, gave to the world its natural
:y. This is one of those parasites, for the discovery
hich we are indebted to the microscope. It was
d trichina spiralis, from its resemblance to a fine
coiled upon itself like a watch spring. The word is
eek origin, signifying a hair. During the year 1835,
ersons were admitted to the London Hospital who
suffering from trichina poisoning. Every since that
leading medical men, not only in Europe, but also
r own country, have been investigating this subject
ılly, and many interesting cases have been observed
ully described. This parasite is only visible to the
l eye when inclosed in its capsule. These appear as
white points where a section of muscle is ex-
ed.

.ce the investigations of Professor Owen, many emi-
German physicians and men of science have been
ing much time to the investigation of this subject,
g whom I might mention, Virchow, Herbst, Zenker,
off, and others. In our own country, I might refer
ɜ eminent Professors, Dalton and Flint.

ɜ trichina is most generally introduced into the
ıch of man in its capsule, though it is possible
to find its way there in the *free* state. This calca-
shell, as it is called, is dissolved by the acid
ı of the stomach, and the parasites thus set free
ly acquire their growth and sexual power, and copu-
ı and reproduction are perfected within one week
their introduction into the alimentary canal. The
e is said to bring forth from sixty to one hundred
trichinæ. The young swarm immediately commence
work of destruction by piercing the coats of the
ıch and intestines. It is not definitely known how
the parent trichina lives after producing the new
n, but it is certain that it never leaves the stomach
ılimentary canal, and probably it dies within a fort-
.

ɜ instinct of the young trichinæ impels them to seek
.bre of the voluntary muscles. In order to reach the
les, the coats of the stomach and intestines must be
ɜd, and this *boring process*, as it is called, gives rise
train of symptoms which closely resemble acute
ɔea, or dysentery. Bloody stools often occur, and
ıtion and perforation of the bowels are frequent re-

sults of this inflammation. The muscles of the abdomen are first attacked, but they soon find their way in to those of the chest and neck, and, by degrees, reach the muscles of the back and extremities. When we remember that a single ounce of flesh may contain trichinæ enough to produce in eight days 3,000,000 young, it is not surprising that the entire substance of the abdominal muscles should be found sometimes entirely consumed.

We are all familiar with the Hettstadt tragedy, which occurred in 1865, when so many lives were lost by persons eating sausage made from trichinous pork. I quote from the *British Medical Journal.* This village is situated near the Hartz Mountains, in Germany. It was an annual feast, and one hundred and three persons sat down to dinner one of the courses being "sausage and vegetables." The sausage had been prepared beforehand for this occasion. The day after the dinner several persons who had participated were attacked with pain and irritation in the intestines, with loss of appetite, fever and great prostration. The number increased from day to day, and an epidemic of typhus, or septic fever, was apprehended, as the symptoms began to assume that character. However, as the disease progressed, the symptoms assumed a different type, and to diarrhea and dysentery and fever, were added peritonitis, circumscribed pneumonia, and paralysis of the abdominal and intestinal muscles, with those of the neck. Then the typhus theory was abandoned, and some unknown poison was assumed to be at the bottom of it. Under this conviction, every article of food connected with the dinner was examined. By this time the trichinæ had reached the muscles of the calves of the legs in some of the victims. The remnant of the sausage was examined, and found to be literally *swarming* with trichinæ. Portions of the muscles of the calf of the leg of the afflicted ones were examined, under the microscope, and were found *full* of *free* trichinæ. These were the progeny of the *encapsuled* ones, which had escaped the smoking and frying process to which the sausage had been subjected. No less than eighty-three of the above-mentioned number died within a few weeks, and the remaining twenty recovered, only after a long and painful illness.

The first genuine case of trichina reported in this country was by Dr. Schoutler, of New York, in 1860. At Marion, Iowa, in 1866, nine cases occurred in one family, under the care of Dr. J. H. Wilson, of whom *five*

died. During the past few years quite a number of cases have been reported from various portions of our country. In the cases referred to occurring in the practice of Dr. S., he examined the ham, which had been eaten, and found it alive with trichinæ. The eminent Professor Dalton also made an examination, and counted in a single muscle, one-twelfth of an inch square, and one-fiftieth of an inch thick, twelve trichinæ, which would give, in round numbers, over 85,000 to the cubic inch.

The committee of the Academy of Sciences, of Chicago, examined large numbers of hogs, and found trichinæ in one out of fifty. Some of their muscles contained from 10,000 to 18,000 trichinæ in a cubic inch.

Early in 1867, the *Springfield Republican* gave an account of six cases of trichinous disease which occurred in one family in that place, caused by eating contaminated uncooked ham. A few days afterward the symptoms of disease began to appear, pain and swelling of the eyes, agony in the stomach and bowels, vomiting, diarrhea, and profuse perspiration. Afterwards the limbs of the sufferers became rigid, the least movement causing the greatest torture; one of the daughters, an interesting girl of seventeen, died, after a fortnight of suffering. In a small portion of muscle examined, trichinæ were found swarming to the fearful extent of from 50,000 to 80,000 per cubic inch.

Not long since a patient died in the Dresden Hospital, Germany, from the effects of trichina poisoning, and the muscles of her body furnished material for numerous experiments, which have thrown much light upon the origin and development of this parasite. A post mortem examination of the body showed the muscles moderately developed, of a pale reddish gray color, and dotted over with specks, which turned out to be germs of new encapsuled trichinæ, lying free upon and within the sheaths of the muscular fibres. They were alive, some coiled up and others lying straight, and they appeared to be in all stages of development, diffused through the striated muscles of the body, not even excepting the heart. The muscles had undergone a very marked degree of degeneration. Death was due to the development of trichina spiralis, whose existence fully explained the anomalous symptoms which attended the case.

Concerning the symptoms caused by the presence of trichina, I will quote from the eminent Professor Dalton He says: "Now, to what symptoms does this acciden

give rise? I have already said within the first ten days there is irritation of the intestines; in some instances this irritation is very great; and the greater it is the more favorable the prognosis, as a general rule. After eating trichinous pork the patient generally begins to suffer within the first week, sometimes within two days. Now, if the irritation of the intestines be extreme, so that frequent and abundant evacuations are produced, the chances are that all, or nearly all, of the parasites will be discharged from the intestines. If so, the patient is safe. But if the irritation be not very marked, time is allowed for the young trichinæ to penetrate the intestinal walls, and enter the muscular tissue—from the end of the first to the end of the second week. This is the most dangerous stage, the second stage of the disease. The passage of the worms into the muscular tissues, and the changes taking place there, are very apt to produce symptoms which result in the patient's death at or before the end of the fourth week. By that time the worms have been completely encysted, and after this the symptoms of irritation begin to disappear. The muscular system becomes habituated, as it were, to the presence of the parasite, and after a while the symptoms all subside; the patient can move his limbs as before, and then considers himself as entirely out of danger."

The great cause of trichina in man is eating pork that is either raw, or not thoroughly cooked. This disease cannot be cured—that is, there are no known specifics in the way of medicines. As soon as the disease is suspected, even, the parasites should be expelled from the intestines as soon as possible, by the administration of active purgatives, which, if commenced in time, may prove successful.

This disease, however, can be prevented. The way to do this is never to eat pork that is not thoroughly cooked. Warming is not sufficient; thorough cooking alone destroys the life of the trichina. All the evidence thus far advanced goes to show that the more the cooking, the milder the disease. Those cases in which the pork was eaten raw, were of the most violent character, and invariably proved fatal.

To show how remarkably tenacious of life these trichinæ are, I quote from Dr. Cobbold, in the *London Lancet*. He says: "'Cook your pork thoroughly,' is not bad advice; but the question arises, What is thorough cooking? On this important point I have to remark, that the app'

tion of very considerable heat is probably rather favorable than otherwise to the development of these entozoa. Recently, on dropping hot water, almost boiling, over living, non-capsuled trichinæ, under the microscope, I found that the only effect was to make the little worms more active. Determined to *kill* some of them, I boiled a minute portion of human trichinized muscle for more than five minutes. The fragment contracted almost to the consistence of leather, yet on subsequently breaking up the trichina capsules, the flesh worms appeared uninjured."

While engaged in penning this article, reports are coming to us daily from different portions of our country of the discovery of trichinous pork, and the mortality in many cases is appalling. Are not we, the custodians of the public health, very much to blame for not bringing this matter more prominently before the public authorities, that something may be done whereby this disease can be at least arrested, if not entirely eradicated? To whom are the public to look, in all matters pertaining to sanitary reform, unless it be to the medical profession? Are we doing our whole duty? We are very much in need of a State Board of Health, and I trust that the time is not far distant when our Legislature will see the *absolute necessity* of passing a bill creating such a Board for Ohio, and it should be the duty of the entire profession to encourage any efforts put forth in that direction, which, if carried out, will result in incalculable benefit, not only to the State, but also to the country at large.

While thorough examination with the microscope will detect the trichina, and thorough cooking will prevent the disease, the only safe and infallible rule, in my opinion, against the terrible ravages of this most loathsome of diseases, is to adhere strictly to the Mosaic law, and abstain from the use of pork entirely.

In view of all the facts set forth in this paper, would it not be far better for all concerned, that a law be enacted prohibiting the use of pork entirely? Or, if this cannot be done, the Government might appoint a sufficient number of competent experts, whose duty it should be to examine all pork microscopically before it is brought to the market, and see that only healthy meat is sold; and until some action of this kind is taken by our General Government, we may still expect to hear of the continued ravages of this disease, and many valuable lives will be needlessly sacrificed, which, by a little timely precaution, might have been saved.

PUBLIC CHARITY

AND

THE MEDICAL PROFESSION.

By G. S. FRANKLIN, M. D.,

Chillicothe, Ohio.

Just so long as human affairs are guided by any lower law than the Golden Rule, so long will poverty and disease be compelled to appeal for public charity when private benevolence is lacking. The great importance of this question to the medical profession demands some thoughtful consideration; hence the following short outline of the present mode of administering this public charity, of placing its burdens, and of awarding its medical emoluments.

The scope and intent of public charity is to aid with food, clothes, shelter, *and with necessary medical care and attention*, all those persons who, by reason of poverty or disease, are unable to take care of themselves. This is accomplished in Ohio, 1st—by means of large public institutions for the care of the blind, the deaf and dumb, the feeble-minded, and the insane; 2d—by means of hospitals and infirmaries for the care of those who are friendless, physically helpless, and more than temporarily poverty-stricken; 3d—by means of childrens' Homes, where orphans and other friendless children of tender years can be fed, clothed and educated, until able to support themselves; and finally, by means of township relief funds, where those only *temporarily afflicted and distressed* can find the help necessary to tide them over their troubles.

The noble public charities supported by this State are well-known to all within her borders. Generous provision has been made for the care and assistance of the blind,

the deaf and dumb, the soldiers' orphans, the feeble-minded, and the insane. When an institution for epilepsies is added to the roll, and when politics are positively prohibited from crossing the threshold of the State charities, they may be considered ideally perfect, so far as poor human nature will allow. The city hospitals, and the county infirmaries, supported by the cities and counties of the State, are capable of doing beneficient service if properly managed. The Childrens' Homes, in good hands, may rescue many poor orphans from the haunts of vice and crime, and bring them up to usefulness and honorable citizenship. The township charities complete this noble scheme of benevolence, and when carefully attended to are capable of doing a vast amount of good among the temporarily afflicted.

The aspect of this whole subject of public charity which is especially interesting to the medical profession, is, that physicians and surgeons are necessarily employed in, and are called upon to take part in a large share of, this service. As the public asks (generally) for no service without reasonable compensation, of course the emoluments of the medical fraternity are considerable. In the State and county institutions, medical emoluments are in specified sums, as decreed by the laws or allowed by Trustees or Directors. The whole profession accepts the justice of the plea that in large public institutions, where many patients are gathered in one place, specified reasonable medical fees may be tendered and accepted. The medical emoluments coming from the State institutions, at a liberal estimate, may amount to $50,000 annually. Those from hospitals and county infirmaries may reach another $50,000, which is an average for each county of about $600. The Childrens' Homes may possibly net to the profession about $10,000. Exact data for estimating the township medical fees are of course only to be arrived at after great labor and research. All estimates must necessarily be open to great criticism—some townships paying out nothing at all, others, thousands of dollars. Does any one here think that an average of $100 per year for each of the 1,500 townships of the State of Ohio is too large? If not, then $150,000 in medical emoluments comes annually from township relief funds, and the central point of interest to the profession at large at once becomes apparent. It behooves us, then, to guard carefully our rights under this head, more especially since it directly affects the interests of *the younger members of the profession,*

who are generally relegated to the sphere of pauper practice, and, through the certainty of prompt payment, are thus enabled to keep their heads above water until firm ground can be reached. The statute law of Ohio, under the head of township medical relief, has always refused to sanction the appointment of salaried township physicians, holding that a person in merely temporary distress and sickness should have the choice of his own physician or surgeon, whose reasonable fees should be paid by the township upon compliance with certain formalities. Other arguments against a salaried physician are, that the position is liable to be sought by political tricksters, by quacks, by dishonorable men who underbid reasonable compensation, and, after securing the place, refuse to do the work, or in other ways wrongfully abuse their trust. Notwithstanding this absence of any legal sanction, many townships do appoint salaried physicians, after, in some cases, inviting competition. In my own township this has been the case for years, with the result that pauper practice has been thrown into the hands of men who do political service, or who have underbid all others with the intention of neglecting the service when obtained, or by dishonorable means augmenting the emoluments as agreed upon. Until within two years, however, any physician, called to attend a pauper either as physician or surgeon, could do so for three days, when the law compelled him to notify the township trustees, and cease attendance if they wished to have the township physician take charge of the case. In the event of the refusal of the trustees to pay reasonable fees for such attendance, suit could be brought and judgment obtained. But the late revision of the laws—according to the recent judgment of the Ross County Court of Common Pleas in the case of Dr. J. W.—does not allow of any effective recourse at law in such cases; that is, the trustees can refuse to act at all, or "*in their discretion*" may award a fee of *one cent a day for twenty-four hours medical, surgical, or obstetrical services*, and such reward must be *final*. To such flagrant injustice the whole medical profession of the State of Ohio must meekly bow *until the law as it now stands, be changed*, and recourse at law be allowed for reasonable compensation. Looking to this end, I would respectfully suggest to this honorable body, that a committee be appointed to examine this question, and to report at this meeting a resolution to be addressed to the General As-

sembly of Ohio asking *a change in the present law*, and praying for liberty to the temporarily afflicted in the choice of their own medical attendants, whose reasonable fees for all proper attendance shall be paid by the township, with recourse at law in case of refusal or of unreasonable awards.

Treatment of Chronic Cystitis,

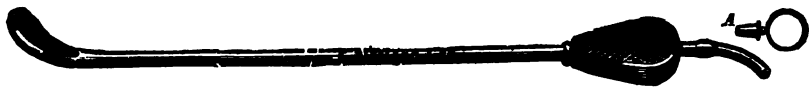
WITH THE AID OF A CURETTE FOR SCRAPING THE SURFACE OF THE BLADDER, DESIGNED FOR THE PURPOSE.

BY W. H. MUSSEY, M. D., CINCINNATI, OHIO.

Professor of Surgical Pathology and Operative Surgery, Miami Medical College.

In a case of lithotrity I was unable to cleanse the bladder of the *debris*, owing to the softness of the stone and the entanglement of fragments in the mucous surface of the bladder, and the blood clots that were present.

At the second sitting I was prepared with a curette that I had had constructed for the occasion. I gradually dilated the urethra with a bougie till I could pass easily



this instrument that I now exhibit to you, a No. 20 (American scale) solid steel sound, which, as you perceive, has a *very long* curve in contrast with the so-called "Van Buren curve," which is short and abrupt. This long curve, of all that I have used, is the best adapted to the neck of the bladder in such cases; indeed, in cases of enlarged prostate, and in persons of middle life, I prefer it to all others.

After the dilatation I used the curette to thoroughly scrape the surface of the bladder and remove much of the scrapings; then with a large silver catheter I cleaned the viscus thoroughly by irrigation, and the patient had a good recovery.

In a second case, where I suspected stone, and the sounding resulted negatively, I dilated to size of bougie, *No. 20*, scraped the surface with the curette, and brought out a quantity of muco-purulent accumulation and clots of blood; then, with irrigation, cleansed the bladder and had a complete success.

A third case, with similar details of condition and practice, was followed by like results.

In the pursuance of this treatment it is important to evacuate the bladder twice a day with the soft rubber catheter.

As a wash for the bladder, I use an emulsion of gum benzoin, one ounce in one pint of water, which should be boiled six (6) hours and filled to one pint. In some cases I add to the emulsion carbolic acid, or boracic acid, in varying proportions.

Constitutional indications are not to be disregarded.

The curette scoop is No. 18, and the shaft, which is a canula, with a stop-cock at the opposite extremity, is No. 14, to which a drainage tube may be attached.

I have requested Messrs. Tiemann & Co., New York, who made the first instruments, to construct one with a double canula.

CASE OF COMPOUND COMMINUTED

FRACTURE OF ASTRAGALUS.

Exsection—Recovery with Useful Foot.

By W. H. MUSSEY, M. D.,

Cincinnati, Ohio.

The record of this case is supplied by J. F. Heady, M. D., late interne to Cincinnati Hospital.

Charles Huckler, of German birth, aged 29, night watch Cincinnati Hospital.

May 19, 1877.—Last night, when in a somnambulic state—so-called (properly alcoholic), he precipitated himself from a third story window, striking on the left foot.

Present condition: Under medium size, well developed and nourished. Physical examination: The viscera of chest and abdomen in normal condition. Atrophy of both legs, with old cicatrices and discolored skin from ulcers and eczema. Left foot is turned upward and outward. At internal malleolus is a triangular wound, extending posteriorly to median line, anteriorly to median line, and downwards and forwards. Through this lacerated wound a portion of the upper part of the astragalus protruded, and was held tightly between the articular suface of the tibia and the foot. This fragment was easily removed, but it was necessary to complete the dislocation of the joint in order to remove the two remaining portions of the bone. A fragment of the internal malleolus was also removed. The dorsalis pedis artery being lacerated, was tied. The wound was closed with continued suture, a drainage tube inserted, and the limb dressed with plaster

of Paris, leaving a trap over the wound.

Ordered: Solution of bi-meconate of morphia, ʒss, with brandy, ℥ss, every two hours till sleep results.

7:30 P. M.—Patient comparatively easy; temperature, 98.6°.

20th.—Rested well during the night. Complained of slight pain; pulse, 100; temperature, 99°.

6 P. M.—Pulse, 105; temperature, 99.8°. Drainage tube accidentally removed and could not be replaced satisfactorily.

Ordered: Quiniæ sulph., grs.v, every four hours. Syringe wound with cold water evening and morning daily.

21st.—Patient perfectly comfortable. Pulse, 110; temperature, 101.4°.

25th.—No record till to-day. Improving rapidly; sleeps well; appetite good.

28th.—Improving. Solution of bi-meconate of morphia discontinued.

June 18.—Has been continually improving, and ale, one bottle a day, has been substituted for brandy.

25th.—Plaster dressing removed, and Day's lateral leg splints applied. There are two sinuses leading within the wound. To be injected daily with Lugol's solution of iodine.

July 10.—Small spicula of bone dislodged from the fractured point of the tibia through the sinus, which still remains open.

November 25.—Patient walking about with ease; sinus closed. A small ulcer over each point of discharge. To be dressed twice a day with a cerate of—

Tannin,
Iodoform. ....āā, ʒi.
Vaseline.....℥i.

December 20.—Congestion and painfulness of joint. Poultice of flaxseed meal applied, and a purge with compound cathartic pills administered.

December 30.—Had a chill, and is in an unsatisfactory general condition

Ordered: Calomel, 6 grs, to be followed with castor oil. Quinia was also ordered, and the following

℞ Hydrarg. chlor., corrosivi .....gr.i.;
Potass. iodidi ..... ʒii.;
Tinct. gentianæ..... ℥i.;
Aquae..... .... ℥ii. M.

Sig. Teaspoonful three times a day.

January 8, 1878.—Wears a slipper on foot. Walks with a cane. Has no pain. General health good. Discharged.

June, 1882.—The subject of this paper is now a nurse on full day service in the Cincinnati Hospital. There is no mobility of joint.

J. F. Heady. M. D., Springdale, Ohio, has prepared a table of cases of excision of the astragalus from 1820 to 1870, and L. A. Nippert, present interne in the Cincinnati Hospital, has supplemented this table to the present date. The following is a resume:

One hundred and thirteen cases—for fracture, 21, with 1 death; for dislocation, 72, with 6 deaths; for disease, 17; for talipes, 3.

Nearly all resulted in anchylosis. A very few were said to have motion. All that survived were reported as "good results."

ACHIEVEMENTS AND FAILURES

—IN—

MEDICAL ART.

By Wm. MORROW BEACH, M. D.,

London, Ohio.

I think that medicine, as a real science and art, can scarcely be spoken of as such, until after the period of the Reformation, when it gradually became divorced from its former connection with sacerdotal robes, with which it had been wedded for fifteen hundred years.

Hippocrates, born at Cos, 460 years B. C., is usually looked upon as the father of rational medicine; yet how imperfect must have been many or most of his ideas, when we recall the fact that, according to his notions, the "glands are spongy bodies, destined to absorb moisture from the neighboring parts, and the brain, the largest of the glands, draws the vapors from the whole interior of the body." His theory was that the body was composed of four humors—"blood, phlegm, bile and black bile," and that the use of the muscles was "for covering for the bones." Disease consisted in a disordered condition of the fluids, which were "subject to coction." When coction could not take place, the disease became mortal. Acute diseases were alone amenable to treatment, chronic diseases being not at all amenable to treatment.

Aristotle, after Hippocrates, was for centuries the great authority in medicine; and yet he located the intellect in the heart, and confounded the nerves with the tendons. For six hundred years Rome had no physician; and the treatment of diseases consisted principally in su-

perstitious observances. In times of great pestilence, when Rome contained a population of a million, and the dead bodies of ten thousand of her citizens a day were carried outside her gates, the dictator sought to appease the gods and stay the pestilence by building a new temple to Apollo, or Esculapius, or by driving a nail into the wall of the capitol.

Andromachus, physician to Nero, was renowned in his time, and one of his prescriptions, called the "Theriac," followed down the centuries, and was eliminated from the pharmacopeias only during the last century. It was composed of the dried flesh of vipers, together with sixty other ingredients, among which were some twenty different vegetables, with as many minerals, balsams, and gums, with carrot seed, licorice, squills, turpentine, cayenne pepper, powder of roasted brass, calamus root, poppy juice, white wax, rhaponticum, castor bean, hoarhound, Attick honey, gentian, ginger, paregoric, Lemnian earth, owl's blood, and Falernian wine! To be taken twice a day for seven years, if necessary, and the dose "doubled at the full moon in desperate cases!" Said to be excellent, also, as a tooth powder!

Galen was born 130 years after Christ. He stands next to Hippocrates, as a sharer in the renown of the early lights in medicine. And yet he followed the theories of Hippocrates respecting the four elements, the four humors, and the four qualities. He advanced a new doctrine that the human soul is composed of three parts—a vegetative, residing in the liver; an irascible, in the heart; and a rational, having its seat in the brain. From the time of Galen, medicine declined with the other arts and literature. It is not presumed that he had ever dissected a human body; and the greater part of the knowledge of human anatomy, which had been protected and patronized by the royalty of Egypt, perished with the destruction of the Alexandrian library.

Diascorides, in materia medica, and Galen, in general medicine, were the authorities for the next fourteen hundred years.

In 1630, Ambroise Pare was a barber surgeon with the French Army in Provence. It was then the theory that wounds received from fire-arms were poisonous, and the custom prevailed of cauterizing their track with boiling oil. On one occasion the supply of oil became exhausted. Pare put in a sleepless, anxious night; but when morning broke, to his great surprise, the wounds that had not been cauterized presented the more favorable appearance.

It was not until the year 1628, that the true doctrine of the circulation of the blood was promulgated. To William Harvey, an English teacher in medicine, the honor is accorded; although Cesalpinus and Servetus had promulgated the discovery of the lesser circulation through the lungs.

In 1661, Malpighi, by the aid of the microscope, traced the flow of the blood globules in the smaller vessels, and in 1691, Lewenhoek traced their circulation through the minutest capillaries.

Out of the knowledge of anatomy, surgery has grown to its present proportions. With their knowledge of anatomy confined principally to the superficies of the body, what could the ancients have known of pathology; of the heart that forces the blood current; of the lungs that purify it; of digestion, of chyle, of chyme, of the action of the liver, of the kidneys? What of brain diseases? of congestion, of inflammation, of concussion, or compression?

It was not until 1619, that Harvey first published to the world the true theory of the circulation of the blood. It was not known until William Harvey demonstrated that fact, that tying an artery stopped the flow of blood in the vessel beyond that point! This discovery drove the red-hot iron of the Europeans, and the boiling pitch of the Arabians, from the operating table, as means for stopping the flow of blood from severed arteries. Tumors are now removed through which the femoral and carotid arteries pass. Distorted and disfigured features are now restored, and builded up by rhinoplastic operations.

The nineteenth century has done more towards the improvement of surgery than all the ages preceding it. It has discovered and introduced anesthesia; it has introduced the practice of resection of bones at the joints; it has discovered that it is the periosteum that furnishes the material for bone growth, and that one may remove any portion of a bone entire, and, if the periosteum is left, the bone will be reproduced; it has introduced the practice of partial amputations of the foot, of amputations of the hip and shoulder joints, of resection, or removal of a part or of the whole of the upper or lower jaw; of the cure of cleft palate, or even of making a new palatin vault; the practice of tracheotomy, to save from death by asphyxia; the introduction of the silver suture; of the immovable apparatus for fractures; for the cure of strabismus; of calculus by lithotrity; and, in 1851, intro-

duced the ophthalmoscope, by means of which the *interior* of the eye can be seen as plainly as the exterior; the successful and perfect cure of club-feet, and hare-lip; of skin-grafting—by which can be healed an abraded surface by clippings or nuclei of cuticle taken from either sex, and at any age.

For the cure of aneurismal tumors, and for other causes, in 1817, Post of New York, ligated the right subclavian artery! In 1827, Mott, of New York, ligated the right common iliac artery! In 1808, Sir Astley Cooper, of England, tied the right carotid, and, in 1817, the same great surgeon tied the great aorta, in the abdominal cavity. But a greater triumph in operative surgery was achieved by Mott, in 1818, when he tied the *arteria innominata*, to accomplish which his ligature had to be carried almost around the heart itself! Was it Billroth who successfully removed the kidney? And what of the removal of ovarian cysts! Old as the world is, it was reserved until the nineteenth century, for McDowell, a backwoodsman of Kentucky, to first perform this operation; and yet since its introduction probably fifty thousand years have been added to the aggregate of human life! The operation has been performed by many members of this Society, and I think Keith, of Dublin, performed over *seventy consecutive operations* without a single fatal result!

And what of the more delicate operations in aural and optical surgery! What of the *accouchement* or extraction of the crystalline lens for cataract! What of making an artificial window for the eye, when the old has become obscured or occluded!

In Materia Medica we have added iodine, quinine, and chloroform. In Pathology the field has been widened and greatly extended. Among the triumphs is that of Alonzo Clarke, of New York, who correctly diagnosed four cases of embolism of the coronary artery, from the physical manifestations alone! I think it was Willard Parker who first, and successfully, cut down for the relief of perityphlitis, while Brainard, of Chicago, inaugurated the practice of subcutaneous section of the neck of the femur in anchylosis of the hip joint.

One can hardly imagine in what further direction the field of achievement will be extended; but that it will be extended and widened, admits of no reasonable doubt.

The microscope is opening a long-sealed book. The experiments of Koch and others may yet lead us to the

subjugation of consumption, while the chemist teaches us that in Asiatic cholera the combined dejecta and blood furnish the chemical equivalents of normal blood. If we are not so fortunate as to achieve the success of preventing this blood disorganization, there is yet a hope that the legal authorities may be persuaded to enforce what all the medical world knows is a preventive of these pestilential outbreaks that sweep around the world—the *prohibition* of the pilgrimages of the combined millions of religious fanatics who toil wearily over leagues and leagues of arid and torrid plain to bathe in the river Ganges, and whose returning highways are strewn with the fallen bodies by the pestilence, "thick as the leaves that strew the vale in Valambrosa.

Edward Jenner has taught us how the Hydra, variola, can be made submissive to our will; and may we not hope that the chemist and microscopist may yet point out the way for the subjugation of *cancer*?

In view of what has been already achieved in the various fields of the healing art, there would seem to be no sufficient cause for surprise for new successes in any of its departments.

TREATMENT OF

PNEUMONIC FEVER.

By W. B. HEDGES, M. D.,

Delaware, O.

Until very recently, pneumonic inflammation was believed to be a purely local affection, and to have its origin from local causes alone, usually from exposure to cold, injuries to the chest, etc. Entertaining this view of the cause and nature of the disease, the early physicians were very naturally led to the adoption of heroic measures calculated, as they believed, to cut short or abort the inflammatory process. In the so-called antiphlogistic treatment of inflammation bloodletting was the chief measure, and one that was supposed to be almost indispensable. In the treatment of pneumonia bloodletting was by many carried to its fullest extent. Cullen and Gregory advised repeated venesections in the same case, and Bouillaud bled his patients daily until the disease was cured, taking at each time from fourteen to sixteen ounces of blood. As the nature and causes of pneumonia are better understood, the inutility of such active treatment becomes more apparent.

The theory so long held by the profession, that the disease is a purely local inflammation of the lungs, arising from local causes, is now believed to be erroneous. The disease is believed to be a constitutional affection, arising from a specific cause, having as one of its chief symptoms infiltration and consolidation of one or more lobes of the lungs, and properly belonging to the class of essential

fevers. That pneumonic fever has for its cause something more than mere local irritation of the air passages, is a fact very generally admitted by pathologists. It is well known that no one has ever succeeded in producing true croupous pneumonia by any of the agencies that were formerly supposed to be its chief causes. Irritants, of whatever kind, acting upon the air passages, violent contusions and penetrating wounds of the chest, have never been known to produce the peculiar pathological changes in the lungs which characterize croupous pneumonia. "Acute lobar pneumonia is always developed irrespective of any extrinsic agencies acting directly upon the pulmonary organs."*

A series of experiments, carefully conducted by Dr. Heidenhain, under the direction of Dr. Cohnheim, in the Pathological Institute of Breslau, bearing upon the question of the etiology of pneumonia, led him to the conclusion that true croupous pneumonia cannot be excited by irritation of the respiratory passages. If we are to regard as essential features of croupous pneumonia that one lobe of a lung, or part of a lobe (lobar pneumonia), should be affected throughout its whole substance, that there should be coincidently pleurisy, that the trachea and bronchi should remain intact, or at least be only secondarily affected, then he has been unable in any of his experiments to establish that disease. In all cases where any disease at all was produced, the trachea and bronchi were primarily, and the lungs secondarily affected, and the affection of the lung presented in all cases essentially similar characters. There were more or less numerous small foci of disease which corresponded with what, in human pathology, would be called catarrhal pneumonia, or broncho-pneumonia. Pleurisy was invariably absent. The general result, therefore, arrived at by Heidenhain is rather in favor of the existence of some specific agent as the cause of pneumonia.†

As long ago as 1866, Dr. Wm. H. Draper, of New York, maintained that pneumonia is something more than a local disease. In a paper read to the New York Academy of Medicine on the treatment of pneumonia, after giving his reasons for believing pneumonia to be a constitutional disease, he said: "These considerations certainly lend support to the theory that pneumonia is something more than a

*Flint, Medical Record, 1876.
†American Jour. of the Medical Sciences, Jan. 1878, p. 258.

local disease, and is rather an essential fever, having a characteristic lesion like small-pox or scarlet fever."* These views have been fully verified by late authors of the highest professional attainments. Juergensen asserts in the most positive manner, that "Croupous pneumonia is a constitutional disease, and is not dependent upon a local cause. The pulmonary inflammation is merely the chief symptom, and the morbid phenomena are not due to the local affection. The hypothesis of a morbific cause is indispensable. Croupous pneumonia cannot be produced by any of the usual causes of inflammation. As in typhoid fever, there must be a specific exciting cause."†

In 1877, Dr. Austin Flint read to the New York State Medical Society a paper on pneumonic fever, in which he points out the "grounds for considering acute pneumonia an essential fever, and not purely a local inflammation," denies the theory so long and so generally held that the disease is a purely local affection, and maintained that the disease is a constitutional affection, and that it properly belongs to the group of essential fevers. He bases his arguments in favor of this proposition upon the evidence furnished by the pathology, etiology, clinical history, and treatment of the diseases. He says: "It is a fever characterized anatomically by an abundant exudative deposit in the air vesicles of a single lobe, or two, and sometimes three lobes of the lungs, with, in general, circumscribed bronchitis and dry pleurisy. It is a fever which rapidly reaches its maximum of intensity, and has a short career, the duration averaging about eleven days. It proves fatal chiefly in consequence of associated diseases, complications or accidents, and the mode of dying is by asthenia. It is non-communicable, and depends on a cause or causes, specific in character, the nature of which is at present unknown, but having relation to season and climate. It sometimes aborts spontaneously; and it is in some instances arrested by remedies. If not arrested, it may be favorably modified, its duration abridged, and the danger to life diminished by treatment addressed, not to the pulmonary affection, but to the fever."‡

We have abundant evidence to show that true croupous pneumonia is excited by miasmatic influences, and that the disease thus produced does not differ from ordinary

*Bulletin of the N. Y. Academy of Med., vol. 11, 1868.
†Ziemssen's Cyclopedia.
‡Medical Record, 1877.

pneumonia, except, perhaps, in the gravity of its symptoms. The so-called pythogenic or sewer-gas pneumonia, to which the attention of the profession was called a few years ago through the medical journals, may be mentioned in support of this statement. This disease, as it prevailed in the city of Dublin in 1874, was studied by Drs. Grinshaw and Moore, and was by them pronounced not only infectious but also contagious, and the treatment which gave the best results was quinine in five grain doses every third hour and alcoholic stimulants.*

Outbreaks of the same form of the disease are of frequent occurrence in over-crowded and badly ventilated buildings, and the mortality is often very great. Of 98 prisoners attacked in the Kentucky State prison, in 1875, 25 died. Dr. Rodman, who gives a very full report of the outbreak,† satisfied himself that the disease was caused by a polluted atmosphere the result of the filthy habits of the prisoners in the use of their "night buckets." The ordinary treatment by carbonate of ammonia, etc., was useless, but quinine in five grain doses every four hours, with alcoholic stimulants and supporting diet, gave better results.

Pneumonic fever runs a typical course, and, like the essential fevers, is self-limited, and has an intrinsic tendency to end in recovery. In fatal cases death is, as a rule, the result of heart failure. In all uncomplicated cases of pneumonic fever the constant danger which threatens the life of the patient is insufficiency of the heart. The danger from this source is increased by a high temperature and extensive pulmonary exudations; by a high temperature from the increased labor thrown upon the heart, and the direct injury inflicted upon it; by the pulmonary exudation from the increased resistance to pulmonary circulation, which increases the labor of the right heart.

Cardiac exhaustion is often manifest to an alarming degree at the very outset of an attack of this disease, before physical signs show more than a very slight pulmonary lesion, for it must be admitted that there is no uniformity of relation between the constitutional symptoms and the pulmonary affection, or it may appear at any time during the career of the disease; hence this source of danger, the chief and almost only one in pneumonic

*American Journal of Medical Sciences, July, 1875, p. 239.
†American Journal of the Medical Sciences, Jan. 1876, p. 76.

fever, must never be lost sight of, and measures calculated to depress or weaken the heart should be scrupulously avoided. The treatment of pneumonic fever must accordingly be addressed to the constitutional affection and not to the pulmonary lesion, and the chief therapeutic indications are a high temperature and cardiac exhaustion.

In the treatment of the pyrexia of pneumonic fever, therefore, such measures only should be employed as have the property of diminishing the temperature without injury to the heart. "One of the most important recent improvements in therapeutics is the treatment of fevers by cold baths." The external application of cold water in the treatment of typhoid fever is a measure that is now quite generally employed, but its application in the treatment of pneumonic fever is yet quite limited, at least in this country. That cold water applications to the body will promptly and effectively reduce the temperature, no one will deny; but the objections to its use in this disease are so great, it appears to me, as to justify the prediction that it will not be favorably received outside of hospital practice. The belief so long entertained, not only by the public, but also by physicians themselves, that pneumonia is the result, usually, of exposure or taking cold, has engendered a strong prejudice against the use of cold applications to pneumonic patients, shared alike by all classes of people and to a very considerable degree by physicians, which will strongly operate against the general introduction of this measure however great its merits may be. It has, also, the very serious objection of inconvenient and troublesome application. Cold water may be applied in the treatment of fevers, either by the bath, the wet pack or sponging. The bath is highly praised by many, especially by the Germans, as an efficient and perfectly safe means of reducing the temperature in pneumonic fever, and in this country has recently found a few supporters. The efficacy of the antipyretic treatment of pneumonic fever by the cold bath was tested in the Kentucky State prison hospital, in 1875, by Dr. S. E. James. Of 18 cases occurring among the inmates of the prison, in a very malignant type, which were treated by the cold water bath and quinine, three only, or a little less than 17 per cent., died. In order to determine the efficacy of the wet sheet in the treatment of pneumonic fever, Dr. Flint carefully selected four cases in Bellevue last winter, which he submitted to this treat-

ment alone. He says: "The treatment is as yet novel in this country. In relating the first two cases at a meeting of a medical society of which I am a member, doubt was expressed by the members as regards a favorable influence produced by the treatment, together with distrust of its propriety and safety. I was not without apprehension, in the first place, in respect of the treatment itself, and in the second place as taking the place of other therapeutical measures, notwithstanding the strong testimony of some German writers in behalf of the efficacy of cold water baths in this disease. Those considerations led to a careful selection of cases." The wet sheet was employed whenever the temperature in the axilla exceeded 103° Fahr. The patient was wrapped in a sheet saturated with water at a temperature of about 80° Fahr. Sprinkling with water of about the same temperature was repeated every fifteen or twenty minutes. The patient remained in the sheet until the temperature in the mouth fell to 102°, or lower, care being taken to watch the pulse and other symptoms. This author says, in reference to these cases: "They certainly show that in cases like those selected the treatment is not hurtful. More than this, they render probable the inference that the disease was controlled and brought speedily to a favorable termination by the treatment."*

As a therapeutic measure in pneumonic fever, cold is indicated whenever the temperature rises to 102°–3° Fahr. When the bath is to be used the method as practiced by Ziemssen will be found to be the least objectionable. The patient is put into a bath of tepid water, about 98° Fahr., ice or cold water is then added until the temperature of the bath is reduced to 80°, or even 60°, or lower. The duration of the bath is to be governed by the effect produced upon the temperature, being usually from ten minutes to half an hour. The bath is to be repeated at the next rise of temperature, which is not usually more than two or three times a day. While in the bath the patient's pulse should be carefully watched, and stimulants should be administered if indicated. Juergensen strongly insists upon the administration of an alcoholic stimulant before the patient enters the bath, as a prophylaxis against the danger from heart failure. When it is decided to use the pack the patient is simply wrapped in a sheet saturated with water at a temperature of about 98°

*American Medical Weekly, Jan., 1882.

Fahr. This may be sprinkled with cold water at intervals of ten or fifteen minutes, until the temperature is sufficiently reduced, to be resumed at the next rise of temperature. The use of cold water does not interfere in the least with the use of other remedies.

Quinine, as an antipyretic in pneumonic fever, is undoubtedly the most valuable remedy that we possess. It has the property, when given in sufficiently large doses, of diminishing the temperature without injury to the heart, which renders it peculiarly applicable in the treatment of this disease. Quinine is always indicated by a high temperature, and to be effective it must be given in large doses. "Quinine as an antipyretic should be given to an adult in doses of from one to two scruples. If it prove effective it may be repeated daily, or every other day."* It is in cases of hyperpyrexia that quinine produces its best results, and in doses of from fifteen to thirty grains it will usually cause a decline of temperature amounting to several degrees. The pulse falls with the temperature, but its force is not diminished. The result of an antipyretic dose of quinine will usually last from ten to twelve hours, or even much longer, and the remedy should only be repeated when the temperature rises. No unpleasant effects, aside from slight cinchonism, will follow the seemingly large doses, and this does not appear to be greater than is noticed after smaller and oft repeated doses. Juergensen says: "Quinine in large doses is tolerated in all cases. My experience has gradually led me to give larger and larger doses. It must not be forgotten that the most dangerous enemy to the heart is a high temperature."† In mild cases in which the temperature does not exceed 103° Fahr., five to ten grains given every four or six hours will usually control the fever and prevent exhaustion. Liebermeister says: "Quinine is manifestly the means of saving the lives of patients who already have a very high degree of cardiac weakness, in whom baths are contra-indicated or no longer tolerated."‡

Veratrum Viride is by many supposed to possess a specific influence in pneumonic fever. Bartholow says of it: "Much that is extravagant has been written in regard to its curative influence in pneumonia, but we need not be surprised at this when we reflect that our knowledge of the natural history of this disease is only of recent origin.

*Flint, Clinical Medicine, p. 67.
†Ziemssen's Cyclopedia, vol. 5, p. 177.
‡Ziemssen's Cyclopedia, vol. p. 216.

Those who knew nothing of the period of crisis of pneumonia, naturally attributed the defervescence of temperature to the effect of the remedy."* Veratrum reduces the temperature only at the expense of the muscular powers of the heart, and when we take into consideration the fact that the great danger always threatening the life of a pneumonic patient is insufficiency of the heart, it is difficult to understand how the so-called specific effect of this drug is to be obtained without, in many cases at least, greatly increasing the danger of heart failure.

Aconite, if properly used, is perhaps the most valuable of this class of antipyretics. When given in moderate doses it diminishes the number of pulsations and produces free diaphoresis. It acts directly on the heart by paralysing its muscular fibres, and it is therefore to be used in this disease with the greatest caution. It is only admissible in the most strongly marked sthenic cases, and in those its effects must be most carefully watched. It should be given at the beginning of an attack and when the pulse is full and strong and the skin hot and dry. It is best given in doses of half a drop to one drop of the tincture of the root, every half hour until the febrile symptoms abate. It is well to observe Ringer's caution, of using this drug with the thermometer in hand.

Digitalis has recently been advised by some as antipyretic in pneumonic fever, but it is certainly of very questionable utility, except in cases of weak and failing heart, and then only in doses calculated to act as a tonic to that organ. In moderate doses it strengthens the heart and regulates its action and increases arterial tension, and may be given with advantage in the latter stages of the disease in those cases marked by prostration and irregular pulse.

To relieve pain and procure rest opium is always indicated in pneumonic fever. It should be given to the extent of procuring perfect comfort to the patient. Aside from the relief afforded to the patient by opium, it stimulates and steadies the contractile powers of the heart, when that organ begins to flag as shown by an irregular pulse. Dr. Alfred L. Loomis speaks with much confidence of the value of opium in pneumonia marked by cardiac exhaustion. He says: "If then, as I have endeavored to show, deficient or vitiated nerve supply is the great cause of heart insufficiency in pneumonia, and if this insuffi-

*Materia Med. and Therapeutics, p. 450.

ciency begins much earlier than is usually recognized by our ordinary methods of examination, for in many instances I have been able to detect it within twenty-four hours from the commencement of the pneumonic attack, occasionally even during the initiatory chill, due, as it seems to me, to the shock which marks the advent of the disease, the question arises, what measures shall we employ to overcome or mitigate the impression made upon the nervous system by the morbific agent which is operating to produce the pneumonia? The experience of the last eighteen months leads me to state with some positiveness that in opium we have such an agent. My rule for the past year has been to bring my patient under the full influence of the drug at the outset of pneumonia, and to hold him in a condition of comparative comfort until the pneumonic infiltration is complete (usually for the first four days of the disease). After this period the greatest care must be exercised in its use, for a new danger threatens, namely, paralysis of the bronchi, and consequent accumulation of secretion in the bronchial tubes, which will greatly increase the difficulties of respiration."* The tendency to exhaustion from failure of the heart is undoubtedly greater in pneumonic fever than in any other of the essential fevers, hence the necessity of prompt and efficient supporting measures. These include alcoholic stimulants and nutritious alimentation. No absolute rules can be laid down for the use of either, and especially is this true with regard to the use of alcohol. Many cases of this disease are so mild as to require little more than palliative treatment; others, again, are from the very outset marked by extreme and dangerous exhaustion. It is the latter class of cases which require prompt and energetic stimulation by full and efficient doses of alcohol, given as often as indicated by the pulse, for the pulse must be our guide in the use of alcohol. It is always indicated when there is the slightest tendency to insufficiency of the heart, as shown by a rapid, irregular and compressible pulse. Cases in which the exhaustion is already extreme, with a feeble and irregular pulse, delirium and profuse perspiration, require the most prompt and efficient stimulation; such cases will surely die unless the cardiac exhaustion can be overcome, and alcohol is the only remedy that can be relied upon in such emergencies.

*Medical Record, June 25, 1881.

In the supporting treatment of this disease, the importance of a full allowance of nutritions alimentation cannot be overestimated. Food in a concentrated form should be allowed the pneumonic patient from the commencement of the attack. Milk and eggs are to be preferred as a diet for fever patients. The milk should be fresh, and given in suitable quantities and at regular intervals. Eggs should be administered raw, whipped up with milk and seasoned to suit the taste, or given in the form of eggnog. I do not place any reliance in the time-honored beef tea and beef essence as articles of alimenation in fevers. They are difficult of digestion, and at the best are very inferior to milk and eggs.

"To conclude: in the milder cases there is no positive necessity for any treatment except a simple regulation of the diet. But the prudent physician will even here usually prefer active interference to passive expectation. In severe pneumonia very much may be accomplished by treatment, if it be carried out in strict accordance with the principle that in this infectious disease it is the heart whose activity must be maintained against the evils which directly threaten it."*

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*Ziemssen's Cyclopedia, vol. 5, p. 181.

ON DIGESTION.

By A. M. BLEILE, M. D.,

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In the following paper I give a brief resume of the teaching of to-day on digestion, together with a few facts brought out by my own experiments, which were, however, incidental to another question in physiology on which I am still engaged; I will not give the details and minutiæ of my experiments to the Society, as that would probably only prove wearisome to the most of us to-day, but shall simply give the results found.

Saliva. Mixed saliva is the product of the parotid, sub-maxillary and sub-lingual glands, the portion furnished by the smaller glands scattered through the buccal cavity being inconsiderable in amount and action. As special constituents we find a trace only of albumen, mucus in quantities varying widely under different circumstances, sulpho-cyanide of potassium, the significance of which is not known, salivary corpuscles with the enclosed granules in rapid motion, a ferment called *Ptyalin*, and, finally, a substance not further known, which may have toxic effects on animals.

Secretion has been most studied in the sub-maxillary (dog, especially). This gland, on irritation of the chorda tympani, gives a copious watery secretion, its arteries and veins dilate, and the blood issuing from the latter is bright red. That secretion is the effect of changes in the gland cells, and is not derived from the increased flow of blood alone, is shown by: 1. Secretion goes on against a pressure in the gland duct higher than that of the blood. 2.

Its temperature is above that of the blood flowing through the gland. 3. Secretion goes on after cessation of the blood flow, and contrariwise, atropia arrests secretion, although the blood vessels dilate just as before on irritation of the chorda. 4. Under the microscope, changes in the cells of the acting and the rested gland can be directly noticed; in the one case they are smaller and filled with granular matter, in the other large and almost homogenious, excepting a small granular mass, near the border, and from this mass the cell again becomes granular. The secretion obtained from the submaxillary on irritation of the sympathetic, is quite viscid and spare; here all blood vessels are contracted.

The secretion of the parotid is clear and limpid, and contains no mucus. Irritation of the cranial nerve (auriculo temporal—trigem.) produces increased secretion, but as yet no effect has been observed from irritation of the sympathetic alone. When both nerves are stimulated, there is an increase in the organic matter of the secretion.

Sub-lingual saliva, little investigated, is more viscid, and richer in solids than that of the other glands.

One of the functions of saliva is to act as a lubricant. It further has the power of changing starch into dextrin and sugar, possibly all of it into sugar if sufficient time is given. Two dextrines are produced, the erythro and the achroo dextrin; the first giving a red color with iodine, the second no reaction. It is pretty definitely settled that the sugar produced is not grape sugar, though agreeing with it in many of its qualitative reactions. The name Ptyalose has been proposed for this product.

Even very dilute acids (.04 per cent. HCl, in my own experiments) destroy the ferments. From this it would seem that the role taken by the saliva in the digestion of starchy matters depends on how long the food remains in the mouth, for its action must cease very soon after its entrance into the acid stomach. It also shows how useless it is to give *ptyalin* in preparations said to contain all the ferments in the alimentary canal.

In grave diabetes, the saliva may take on an acid reaction.

Gastric juice is the product of the epithelial cells lining the mucous membrane, and of two sets of glands—the one situated chiefly at the pylorus and the cardia, the other —the peptic glands—distributed far more widely and closely throughout the stomach. Gastric juice ordinarily contains little or no mucus, the ordinary salts, from .2—.5

per cent. HCl, its specific ferments, pepsin, rennet-ferment, lactic acid ferment, and, in many cases, free lactic acid as a product of fermentation.

Studies made with artificial gastric juice, *i. e.*, glycerine or water infusions of the mucous membrane and HCl, are quite satisfactory and in most instances take the place of juice obtained through a gastric fistula.

In the peptic glands we have two kinds of cells; large, ovoid border cells, formerly called peptic cells, and central, smaller cells, the chief cells. Before a meal these latter are pale and finely granular; early in digestion they are larger, turbid, and coarsely granular; later, still more turbid and granular. The same changes are observed in the cells of the mucous glands. These cells in both glands furnish not the pepsin directly, but pepsinogen, from which the pepsin is formed during secretion. The peptic glands furnish the acid, and probably through the cells formerly called peptic cells. In fever, the secretion of acid is lessened or quite suppressed, whereas the pepsin is not notably affected; an explanation, possibly, of the good effects of the administration of the mineral acids,in typhoid notably. Local irritation of the stomach produces a secretion, but only at the spot irritated, and secretion goes on even after division of the pneumogastrics; yet other facts show that secretion is, in part, at least, controlled by a reflex nervous mechanism, the paths of which remain to be made out.

In gastric digestion the albuminoids chiefly are affected, being ultimately changed by the pepsin into a substance called peptone, differing from them, 1, in not being precipitated by boiling or acids; 2, nor by K_4 $FeCy_{,6}$ and acetic acid; 3, nor by neutralization of its acids or alkaline solution, and, 4, in being highly diffusible. Much discussion has been had as to compounds intermediate between albumen and peptone and the matter is not yet fully cleared up. Peptone is to the albuminoids chemically as hydrates are to the anhydrides. When injected into the blood it has the power of preventing blood coagulation, a fact to be borne in mind in connection with the intra-venous injections of this substance lately recommended after exhausting hemorrhages. The rennet ferment coagulates milk, even in alkaline solutions, and the lactic acid ferment, whose existence is, as yet, not entirely beyond a doubt, converts sugar into lactic acid.

Further Action in the Stomach. Starch is partially converted into soluble starch and erythro-dextrin, cartilage

is dissolved and partially digested, gluten and connective tissue dissolved, the gelatine losing its peculiar property, and fats are liquified and partially split up into fatty acids and glycerine. I have found that cane sugar is speedily converted into grape, or, at least, a reducing sugar, both by artificial and natural gastric juice. This change is probably brought about by the acid only, for I find that HCl, even in great dilution, will convert cane sugar promptly when held at the body temperature. So little as .005 per cent. acts decidedly in fifteen minutes, and even .003 per cent. will act in 2–4 hours.

In fevers, as already mentioned, pepsin continues to be formed, but little or no acid, and fermentation and gas eructation can take place in the stomach only when there is neutral or alkaline reaction. Administration of alkalies by neutralizing the acid forming, which would finally check fermentation, will therefore only make matters worse in the end. Small doses of salicylic acid and then HCl, to increase peptic action, would seem to be indicated in such a condition. The administration of pepsin can do little good in dyspeptic conditions, unless HCl, or a substance like bismuth, which possibly acts as a local stimulus, accompany it.

The Intestinal Juice. This also has three sources: 1. The columnar epithelium, lining the part. 2. The mucous, or Brunner's glands. 3. The follicles of Lieberkuhn. The juice is alkaline, contains mucus, coagulable albumen and ferments. No method has yet been devised better than Thiry's for obtaining larger quantities of this juice in a normal state. Division of the nerves of the part gives rise to a copious watery flow.

As to the special action of the intestinal juice, there is still much doubt, some observers crediting it with all the powers of the other juices, others giving it only a power over starch and then not more than is found in infusions of other tissues. Albumen and starch, placed in isolated parts of intestine, were slowly digested, but here simple putrefaction may have played an important part, all the more readily the bile being wanting. I worked with glycerine and water infusions of the dog's intestine, and found them to act constantly on starch in neutral and slightly alkaline media; greater alkalinity and acidity, as 2 per cent. HCl, destroyed this power. On fibrin I found no action whatever, either in neutral, alkaline or acid fluids. Cane sugar was always promptly converted in a neutral or feebly alkaline solution. Greater alka-

linity checks this, and acids, as I have already stated, invert cane sugar of themselves at 40°C.

In the normal state the amount of secretion of the intestine must be very small. In a dog with an intestinal fistula, I never saw fluid escaping unless after feeding, and then with the food only. The large intestine has no digestive action, *per se*, but digestive changes started higher up may to some extent continue here.

Pancreatic Juice. This is obtained from a fistula, or infusions of the gland. The pancreas is, histologically, like the salivary gland, and they have one ferment in common.

This juice contains a larger quantity of proteids than the other fluids, and changes its composition with the rate of secretion. It contains albumen, leucin, tyrosin, fats, soaps, sodium carbonate and three ferments. That there is a nervous regulation for this secretion is shown by several facts. The flow rises almost immediately after the ingestion of food, falls about the second hour, to rise again, but not so high, about the sixth hour. Irritation of the medulla oblongata increases the flow. Nausea or vomiting, and also irritation of the central end of the cut vagus, arrest it. Afferent impulses go up by the vagus, but influences going to the gland follow a path as yet unknown.

The pancreatic cells, before feeding, show a large granular inner zone, the secreting material, and a smaller outer clear zone; which position becomes reversed during digestion to such an extent that the inner granular zone may almost disappear. The cells also shrink, the increase and decrease of the two zones not being equal. The nucleus, irregular and distorted at first, becomes sharp, round, with a plainly visible nucleolus.

Pancreatic juice acts on starch more powerfully than saliva, but with the same end products. The second ferment, trypsin, is not contained as such in the gland, but formed from its zymogen and oxygen during secretion. It converts albuminoids into peptone, like pepsin, but along with it are formed two crystalline bodies, leucin and tyrosin, in quantities varying with the amount of albuminoid matters introduced, a relatively much larger quantity arising after a larger ingestion of albuminoid matter, than when less is taken in. The third ferment splits fats into glycerine and fatty acids. These latter facilitate the production of emulsions—which are, however, readily formed in albuminoid fluids—by forming

soaps with the alkalies present. Soaps are probably necessary, and are formed in small quantities only and do not enter the blood as such; for I have shown that their introduction, in small quantities even, directly into the blood causes an intense, though transient, hematuria. Pancreatic juice acts only in neutral or alkaline fluids: additions of acid (HCl to .5 per cent., or Na_2CO_3 to .3 per cent.) destroy it. Out of the body this juice and foodstuffs rapidly undergo putrefaction. In the intestine it is hindered, but not entirely prevented, by the bile, and its products soon appear, some of them being those produced by digestion only; of the others I will only mention indol, and, in man, skatol, which give feces their characteristic odor and gases.

Trypsin, or Pancreatic Ferment, is itself digested by the gastric juice; another argument against preparations containing all the ferments of the alimentary canal.

The Bile. This takes a secondary role only in digestion, and I will not consider it in detail. Through its alkalinity and solvent action on soaps, it may assist in fat digestion, and the intestine may be more readily permeable from its presence. The bad effects from loss of bile by fistulæ are likely only due to loss of certain substances which are re-absorbed from the bile, and not to the want of the assistance of this fluid in digestion.

RETINITIS ALBUMINURICA.

By S. C. AYRES, M. D.,

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Diseases of the kidneys form an interesting and deservedly important group. From the earliest history of medicine they have excited unusual attention, and particularly since the pathological changes have been studied by the aid of the microscope. Chemistry, also, has come to our aid to explain many changes which take place in the secretion of these organs, and has thrown a flood of light on a subject which was once enshrouded in darkness. More recently the ophthalmoscope has opened a new field of investigation, and we now detect retinal alterations even before the presence of Bright's disease is known to the patient.

I need not describe the symptoms of this much dreaded disease; they are familiar to you all. You have all probably watched these cases, and marked with the test tube the varying amounts of albumen as symptoms were favorable or unfavorable. You have seen some of these cases recover under treatment, and others gradually progress in spite of your best endeavors to check the malady. From the fact that some of these cases must first fall into the hands of the oculist, in consequence of the retinal complication, it would seem that the symptoms of renal disease must be masked by symptoms attributable to other organs. It is well known that vomiting, dyspepsia, diarrhea, anorexia and anemia are associated with Bright's disease, and yet they may all fail to lead the physician to the true source of the trouble, unless he resorts to the aid of the test tube and the microscope. Even dropsy, a symptom upon which we place so much reliance, may be

so insignificant as not to excite much attention until the disease has nearly run its course. I do not propose to discuss the question of Bright's disease, nor to lay down any general line of treatment, for you all have your own experiences, but I wish to call your attention to the manifestations of this disease which are visible with the ophthalmoscope.

It occasionally happens, and I have seen a few such cases, that the failure of vision is the first symptom which makes the patient aware that he is suffering with disease of the kidney. Previous symptoms have been either misconstrued or overlooked, and when he finds his vision failing he flies to the specialist for advice. I do not know in what proportion retinitis albuminurica is associated with Bright's disease. According to some statistics it occurs in from nine to twenty per cent., and according to others in thirty-three per cent.

Dr. Earles (*Birmingham Medical Review*, 1880), in a report of 100 cases of kidney disease, is thus summarized by Dr. Noyes, in his recent work on disease of the eyes, which I quote: "Out of 100 cases 94 had albumen when examined; almost all were inspected but once. In 28, there were retinal lesions, and in 3 there were lesions of the optic nerve. Of the 31, about one-third were unaware of any visual defect. In 12 of the 28, both eyes were effected; in 16 but one eye was concerned—a result unlike what previous observers have recorded, probably because the cases studied by others have been those in which conscious visual defect occurred."

Galezowski reports eye lesions in albuminuria at thirty-three per cent.; Lecorche at twenty-one per cent., and Lebert at twenty per cent. Flint says that he has seen six or eight cases of amaurosis in about a hundred cases of Bright's disease. Voelckers reports that out of 30 cases two were incident to pregnancy; all the rest were in individuals who were suffering from atrophy of the kidneys.

I am indebted to Dr. E. Carson, *interne* of the Cincinnati Hospital, for the following statistics on the subject for the years 1877, '78, and '79. The records show that there were during that period 104 cases of albuminuria. Typical retinitis occurred nine times, or in 8.6 per cent. There was one case of blurring of the optic discs, which was probably the initial stage of retinitis. As no subsequent ophthalmoscopic examination is recorded, we cannot state what retinal changes may have taken place. The

patient died of Bright's disease, and I deem it proper to include him in the above cases of retinitis. This will make the whole number 10, or 9.6 per cent. Ophthalmoscopic examinations are recorded in three cases, where no retinal changes were seen. This would leave 91 cases where the eyes were either not inspected, or where no record of such inspection was made. I am disposed to think that the former is true, and that the eyes were never examined. It is quite likely that retinal complications may have occurred in several of them. The final result of these cases of retinitis is as follows: Of the whole number (ten) five have died; three were reported as improved, two as unimproved, when discharged from the hospital.

It may interest you to know that phthisis occurred in eight cases, or 7.6 per cent., pneumonia in 3.8 per cent., and aortic stenosis in two cases. In one case the typical retinitis was associated with a tumor of the brain. Of the whole number (104) reported for these three years, 33, or 31 per cent. died; 20 per cent were reported as unimproved, 48 per cent. as improved, and none as cured.

I am disposed to think that retinal complications occur in only a small proportion of the total number of cases of albuminuria, and these principally in the small granular or contracting kidney.

The changes noticeable in the fundus oculi are so characteristic and striking that when once seen they can be easily recognized again. It has been confidently stated by some that this disease could always be identified with the ophthalmoscope when any ocular complication occurred. While this statement is true for the great majority of cases, it is not absolutely true for all. There are cases of neuro-retinitis associated with brain tumor, which very closely resemble in all particulars the ophthalmoscopic picture which one sees in albuminuria. The other associated symptoms, and the absence of albumen, will here decide the question as to its cerebral or nephritic origin.

When the fundus oculi is inspected in the early stages of nephritic retinal inflammation, a blurring of the optic disk is noticed, with obscuration of the blood vessels, particularly of the arteries. The retina presents an edematous or opaque appearance, and seems to have been pushed forward toward the cornea. The eye in such cases appears hypermetropic, from the change in the relative position of the retina. Here and there are circular or irreg-

ularly shaped white splotches on the retina, due to fatty degeneration. They are most numerous around the macula lutea, and arise from changes in the cellular and connective tissue elements of the retina, especially the external granular layer. There are also white lines in the region of the macula lutea, arranged in a stellate form, which constitute the most striking feature of the ophthalmoscopic picture. Taking the yellow spot as a center, these lines diverge from it, but only form an arc of a circle. They are on the temporal side of the optic disk, and appear as bright and shining as opaque nerve fibre. Hemorrhages, more or less abundant, are scattered over the central portion of the retina, or directly in the vicinity of the macula. After the disease has run its course, it often leaves a central scotoma and the fundus marked by a patch of choroidal atrophy, fringed with pigment. At other times the retinal manifestations disappear entirely, leaving no trace behind. This is particularly the case when they occur during pregnancy. It is surprising to note that in some cases of marked retinitis there is very little or no impairment of vision. It seems paradoxical to make such a statement, but it is nevertheless true. The probable explanation is that the conducting nerve fibres are not interfered with, and that the macula lutea is intact. I well remember an instance where vision was almost perfect, and yet the patient had a retinitis in both eyes which seemed sufficient to quite destroy vision.

One of the peculiar symptoms is the loss of color sense, while the field of vision remains intact. Dr. Holmes, Chicago, reported in the *Archives of Ophthalmology*, a very interesting case of retinitis albuminurica occurring during pregnancy. The patient was totally blind three weeks, and absolutely color-blind three months. Perception of black and white first returned. "At the end of three months blue tints began to appear, then yellow, brown and red, and finally green." It was only after five years that she had power to distinguish different shades of green. From being absolutely blind she recovered excellent vision and could read Jaeger No. 1.

It is only recently that I had an opportunity of seeing two cases of albuminuric retinitis, both ending fatally. One, a journalist of this city, had for years suffered from the malady, and had been judiciously treated by skillful men. His vision began to fail in both eyes almost simultaneously, and presented the characteristic ophthalmo-

scopic changes. Swelling of the optic disk, cloudiness of the retina, exudations in the region of the macula, and retinal hemorrhages, were visible in both eyes. The changes in the retina seemed to be the last act of the drama which was to close his career. As his vision was veiled, the curtain slowly descended and in a few weeks dropped between him and all things earthly.

Another one was a member of this society (Dr. Brown, of Dennison,) doubtless known to many of you. He was a hard worker, attending to a laborious practice and taking care of every one but himself. The disease insidiously gained on him, but still he worked on, never resting until his vision began to fail. The ophthalmoscope showed the characteristic changes, and the test tube proved the urine highly charged with albumen. He seemed to suffer very much with his heart, and had difficulty in walking or going up stairs. His skin was dry and parchment-like, and his body somewhat emaciated, which latter condition had developed rapidly. He had an unquenchable thirst, and suffered from insomnia. In scarcely more than two weeks from the time the ocular symptoms had developed themselves, he died.

Albuminuria may occur in the forms of kidney disease described (Flint) as large kidney, large waxy kidney, and the small granular kidney. It is also associated with typhoid fever and scarlatina, and with pregnancy as has been mentioned.

Along with Bright's disease is often noticed hypertrophy and dilatation of the left ventricle. Flint says that out of twenty-six fatal cases, in eleven there was more or less enlargement of the heart without valvular lesion.

It is not supposed that you are all sufficiently skilled in the use of the ophthalmoscope to diagnose Bright's retinitis, (I heartily wish you were) but it is in your power to determine the presence or absence of albumen in cases of amblyopia. May I presume to ask you to pay some special attention to these cases, to take notes of them, and to let the profession have the benefit of them. It is difficult for one person to furnish large statistics on any subject if he depends on his personal observations. It requires the concurrent observations of a large number of persons, extending over a broad area. Now in our State Society we have, say in round numbers, six hundred members. If we wanted to determine how often retinitis was associated with Bright's disease, and I could get a report from each member of five cases only,

it would give us a total of three thousand cases. It would be both interesting and valuable to determine this point, and with your assistance I will endeavor to do so. If this is not an association for mutual improvement, and for the collection and dissemination of valuable information, what is it? You could in a short time collect your cases, send them to me, and furnish me with statistics which would be of practical value to the profession, and would make the work of our Society attract great attention. You could, at the same time, mention cases of amblyopia occurring during pregnancy, and after scarlatina and typhoid fever. I take it that this is the legitimate work of our Society, and that this is the way to work together. The time is past when one man writes a work on practice or surgery. It is done by a great many hands, and is much better done than by one. Now if you can furnish the cases of Bright's disease occurring in your practice, and they can be collated, and deductions made therefrom, you will be helping to determine facts, and these are what we are after. Will this appeal meet with a response from the members?

LIST OF MEMBERS

—OF—

THE OHIO STATE MEDICAL SOCIETY,

—WITH—

POST OFFICE ADDRESS AND DATE OF ADMISSION.

LIST OF MEMBERS

OF THE

OHIO STATE MEDICAL SOCIETY,

With Post Office Address and Date of Admission.

NAME.	P. O. ADDRESS.	ADMITTED.
Alcorn, A. W.	Ravenna	1870
Allen, D. B.	West Liberty	1865
Allen, Dudley	Oberlin	1870
Asbury, T. B.	Jerome	1878
Arms, Chas. C.	Cleveland	1880
Axline, J. D.	Shawnee	1882
Ayres, J. H.	Urbana	1876
Ayres, S. C.	Cincinnati	1877
Baker, W. O.	Louisville	1882
Baldwin, J. F.	Columbus	1875
Ballinger, J. B.	Versailles	1880
Ballinger, Wm. J.	Plain City	1864
Banning, J. C.	Round Head	1876
Barnes, W. T.	Fredricksburg	1879
Bartlett, E. P.	Genoa	1874
Barton, T. J.	Zanesville	1881
Battles, W. S.	Shreve	1858
Beach, A. J	Belleville	1863
Beach, A. P.	Seville	1880
Beach, J. N.	West Jefferson	1854
Beach, W. M.	London	1879
Beaugrand, Pierre	Fremont	1853
Beardsley, C. E.	Ottawa	1869
Beck, J. S.	Dayton	1879
Beeman, E. E.	Wakeman	1880
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Belden, A. C.	Akron	1878
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NAME.	P. O. ADDRESS.	ADMITTED.
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Besse, H.	Delaware	1868
Beverly, P. V.	Columbus	1881
Bevington, J. S.	Berlin	1878
Bing, J. P.	Portsmouth	1851
Bishop, S. P.	Delta	1870
Blake, W. H.	Shadeville	1878
Bland, Jerome	Poplar	1876
Bleile, A. M.	Columbus	1882
Blizzard, S. R.	Bellefontaine	1860
Bœrstler, G. W.	Lancaster	1870
Bowen, A. H.	Lincoln, Neb.	1878
Boylan, A.	Milford Centre	1878
Bramble, D. D.	Cincinnati	1870
Brainerd, H. C.	Cleveland	1870
Brayton, F. W.	Carey	1881
Bricker, W. R.	Shelby	1848
Brinkerhoff, D. H.	Fremont	1853
Brockett, A. J.	Bristolville	1874
Brown, H. M.	Williamsburg	1882
Brook, G. W.	Ellsworth	1858
Brundage, A. H.	Xenia	1878
Brush, E. C.	Corning	1878
Buckner, J. H.	Cincinnati	1863
Buckingham, E. B.	Centerton	1874
Buechner, W. L.	Youngstown	1879
Buffett, Lewis	Cleveland	1880
Bunce, Wm.	Oberlin	1864
Bunn, J. W.	West Union	1882
Burton, E. D.	Collamer	1880
Butler, Geo. O.	Cleveland	1870
Butler, G. W.	Columbus	1869
Caldwell, W. W.	Hamilton	1874
Carmichael, W. A.	Loveland	1871
Carpenter, Julia W.	Cincinnati	1879
Carson, W. B.	Bucyrus	1874
Carr, E. C.	Coshocton	1882
Carrick, A. L.	Cincinnati	1871
Case, Guy B.	Cleveland	1880
Chamberlin, D. P.	Toledo	1874
Chapman, W. C.	Toledo	1875

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Chase, James L.	Toledo	1874
Christopher, H. H	Van Wert	1881
Clark, D. M	Columbus	1881
Clark, Henry P	Ashland	1862
Clark John H	Mechanicsburg	1869
Clark, M. S	Youngstown	1865
Coleman, N. R	Columbus	1875
Collamore, G. A	Toledo	1880
Conklin, W. J	Dayton	1868
Conner, P. S	Cincinnati	1868
Constant, W. S	Delaware	1866
Cooney, H	Bryan	1875
Cooper, A	Columbus	1881
Corlett, W. T	Cleveland	1882
Corson, John	Middletown	1866
Corson, O. M	Trenton	1879
Cornwell, H. G.	Columbus	1874
Cotton, J. D	Marietta	1852
Courtwright, A. P	Circleville	1871
Courtwright, G. S	Lithopolis	1867
Covington, P. D	Bellefontaine	1881
Cox. J. M	South Salem	1877
Crafts, J. M	Cuyahoga Falls	1880
Craig, J. W.	Mansfield	1874
Crane, A. M	Kilbourne	1881
Cretcher, Wm. H	Bellefontaine	1880
Culbertson, Howard	Zanesville	1855
Culbertson, J. C	Cincinnati	1880
Cushing, J. T	Huron	1880
Cuykendall, M. C	Bucyrus	1874
Dandridge, A. S.	Cincinnati	1854
Dandridge, N. P	Cincinnati	1871
Darby, F. H	Morrow	1882
Darby, J. E	Cleveland	1880
Daugherty, J. D	Dayton	1879
Davis, B. W	Marion	1878
Davis, John	Dayton	1853
Davies, W. C	Granville	1882
Davis, Wm. B	Cincinnati	1865
Davy, R. B	Cincinnati	1875
Dawson, J. O	Westerville	1881

NAME.	P. O. ADDRESS.	ADMITTED.
Dawson, W. W	Cincinnati	1853
Denig, R. M	Columbus	1851
Denman, W. C	Marion	1882
Dickey, Thomas A	Middletown	1879
Donahoe, H. J	Sandusky	1854
Donnellan, J. E	Germantown	1879
Dorland, W. L	Chicago, Ills	1878
Downs, Samuel	Waterville	1876
Drake, J. L	Lebanon	1859
Drury, Wm. H	Columbus	1859
DuBois, E. B	Dayton	1879
Dumm, S. C	Constantia	1877
Duncan, James A	Toledo	1874
Dunlap, Alexander	Springfield	1854
Dunlap, A. S	Dayton	1868
Dunlap, C. O	McArthur	1881
Dutton, C. F	Cleveland	1880
Dwyer, R	Petersburg	1879
Ealy, A. E	Albuquerque, N. M.	1879
Ebright, L. S	Akron	1870
Eckman, Hiram	Tuscarawas	1869
Edwards, J. D	Xenia	1867
Eichberg, Joseph	Cincinnati	1882
Emery, W. H	Mt. Sterling	1881
Erwin, R. W	Bay City, Mich	1872
Evans, A. E	Columbus	1882
Evans, Geo. B	Middletown	1879
Evans, R. R	Franklin	1879
Everhard, N. S	Wadsworth	1870
Ewing, James	Hebron	1875
Ewing, S	Plain City	1882
Fackler, J. E	Versailles	1879
Falconer, Cyrus	Hamilton	1854
Fenneberg, Gustavus	Toledo	1874
Ferguson, J. W	Rittman	1882
Ferrell, C. B	Columbus	1878
Firestone, J. L	Salem	1870
Firestone, L	Wooster	1852
Fisher, H. M	Akron	1881
Fisher, P. Q	Nashport	1873
Fisher, W. S	Bridgeport	1876

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Follett, Alfred	Granville	1864
Forbes, S. F	Toledo	1856
Foster, G. F	Kingston Center	1882
Fowler, C. R	Sparta	1880
Fowler, S. W	Delaware	1873
Frankenburg, O	Columbus	.....
Franklin, G. S	Chillicothe	1876
Frizzell, W. A	Freestone	1872
Fuller, A. B	Loudonville	1868
Fuller, S. W	Bellefontaine	1853
Fulton, C	Bucyrus	1881
Galbraith, E. C	Frankfort	1876
Galer, Frank M	DeGraff	1874
Gawne, A. J	Sandusky	1870
Gay, N	Columbus	1848
Geer, F. H	Rock Creek	1880
Gibson, Richard D	Youngstown	1882
Gillespie, J. M	Bloomingsburg	1880
Gilliam, D. T	Columbus	1873
Glenn, W. W	Bloomingsburg	1882
Goodson, J. W	Sterling, Kan	1874
Gordon, T. W	Georgetown	1849
Graefe, Philip	Sandusky	1875
Graefe, Wm	Sandusky	1874
Granger, B. D	Russell Station	1878
Granger, F. M	Russell Station	1881
Gray, F. C	Lewisburg	1879
Gray, S. S	Piqua	1867
Greenamyer, P. S	Smithville	1875
Green, D. W	Dayton	1882
Green, H. S	Cardington	1878
Green, J. W	Fairfield	1853
Green, J. H	Troy	1871
Green, G. W	Fairfield	1882
Guittard, F	New Bedford	1875
Halderman, D	Columbus	1869
Hall, C	Burlington	1872
Hall, W. W	Springfield	1882
Hamilton, J. W	Columbus	1849
Hammel, M	Circleville	1878
Harrison, Eugene B	Napoleon	1869

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Hart, B. F.	Marietta	1854
Hart, C. S.	Lincoln, Neb.	1877
Hartman, S. D.	Tippecanoe City	1874
Hayes, R. P.	Vienna	1880
Heiter, Carl	Sandusky	1875
Helbish, F. S.	Green Springs	1876
Helmick, G. W	Harrisburg	1878
Henderson, D. W.	Marysville	1856
Henderson, J. P.	Newville	1850
Henderson, R. A.	Upper Sandusky	1865
Hendrickson, Hugh	Columbus	1868
Herrick, H. J.	Cleveland	1868
Herrick, L. C.	Columbus	1871
Heustis	Chesterville	1869
Hewetson, A. H.	St. Clairsville	1878
Hill, N. S.	Neville	1866
Hill, H.	West Alexandria	1867
Hiner, S. B.	Lima	1874
Himes, Isaac N.	Cleveland	1874
Hims, J. A.	Van Wert	1879
Hobson, J. A.	Flushing	1880
Hohly, Frederick	Toledo	1874
Hoff, J. W.	Pomeroy	1872
Holliday, B. W.	Cleveland	1875
Hoover, C. C.	Ross	1880
Hough, C. A.	Waynesville	1881
Hough, W. S.	Cuyahoga Falls	1875
House, A. F.	Cleveland	1880
Hovey, A. B.	Tiffin	1875
Howard, E. W.	Akron	1852
Hubbard, J. C.	Ashtabula	1856
Hugnes, M. A.	Port Clinton	1877
Humiston, W. H.	Cleveland	1880
Hunter, F. S.	Ashland	1878
Hurd, A.	Findlay	1870
Hueston, R. C.	Oxford	1868
Hyatt, E. H.	Delaware	1862
Iddings, A. H.	Dayton	1879
Ikirt, G. P.	East Liverpool	1882
Isham, A. B.	Walnut Hills	1871
Jacobs, W. C.	Akron	1881

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Jenkins, W. J.	Plain City	1880
Jenkins, E	Dayton	1867
Jewett, W. H	West Canaan	1869
Jewett, H. S	Dayton	1871
Johnson, Homer	Oberlin	1880
Johnson, O	Worthington	1878
Jones, C. B	Xenia	1879
Jones, Allen	Kinsman	1880
Jones, Carrie L	Kinsman	1880
Jones, T	London	1878
Jones, T. W	Columbus	1847
Jones, R. E	Gomer	1863
Jones, W. W	Toledo	1849
Jones, J. D	Newburg	1870
Judkins, C. P	Cincinnati	1878
Kay, Isaac	Springfield	1853
Kearney, T. H	Cincinnati	1871
Kelly, H. R	Galion	1868
Kelly, W. J	Indianapolis, Ind	1881
Kemp, J. D	Dayton	1868
Kemper, A. C	Cincinnati	1871
Kennedy, J. C	Batavia	1854
Kennedy, C. P	Bellefontaine	1881
Kendig, E. V	Haysville	1874
Keyt, A. T	Walnut Hills	1850
King, E. L	Ashtabula	1880
King, C. P	Newark	1882
King, E. G	Richmond	1882
King, A. P	London	1882
King, C. W	Cleveland Ins. Asyl.	1881
Kinsman, D. N	Columbus	1864
Kitchen, H. W	Cleveland	1874
Kirkley, C. A	Toledo	1874
Knowlton, A. P	Berea	1870
(1) Krause, Bernard	Cleveland	1880
(2) Kurz, C. E	Bellaire	1875
Landon, C. P	Westerville	1851
Landis, H. G	Columbus	1878
Larimore, James	Newark	1875
Lash, H. M	Athens	1879
Lash, J. W	Chillicothe	1879

NAME.	P. O. ADDRESS.	ADMITTED.
Lee, E. B	Garretsville	1870
Lee, H. J	Cleveland	1880
Lee, M. F	Columbus	1881
Leever, J. H	Defiance	1881
Lenhart, P. J	Wauseon	1880
Leland, A. G	Trumbull	1880
Leonard, B. B	West Liberty	1854
Leonard, B. S	West Liberty	1882
Leslie, J. M	Frankfort	1878
LeVan, D. H	Mt. Victory	1879
Lewis, Edward C	Canal Dover	1870
Lewis, W. C	Rushville	1869
Little, D	Logan	1882
Loving, S	Columbus	1858
Lowman, J. H	Cleveland	1877
Ludington, H	Omaha, Neb.	1871
Ludlow, J	Cincinnati	1871
Lyman, C. N	Wadsworth	1852
Mack, John	Shelby	1853
Mann, H. L	Wapakoneta	1875
Markel, J. F	Mifflin	1881
Marshall, O. M	Jeffersonville	1881
Mattoon, F. N	Plain City	1881
McCarty, O. C	Polk	1858
McCasky, H	Hamersville	1868
McClure, James	Marietta	1866
McCollum, E. J	Tiffin	1871
McConnelly, F. C	Vermillion	1875
McCracken, J. W	Sterling, Kan	1877
McCurdy, John	Youngstown	1870
McCurdy, S. L	Dennison	1882
McCullough, J. G	Bellaire	1868
McEbright, T	Akron	1866
McElwe, S.	Newcastle	1866
McFarland, J. A	Tiffin	1850
McGee, J. B	Cleveland	1880
McGrew, Henry	Pleasant Ridge	1878
McIlhenny, J. J	Dayton	1846
McIntire, W	Millville	1881
McLaughlin, A. C	Tremont City	1852
McMillen, J. W	Mt. Vernon	1878

NAMES.	P. O. ADDRESS.	ADMITTED.
McMurray, A. B.	Marion	1879
McNutt, A. C.	Bucyrus	1878
McNutt, H. E.	Milwaukee, Wis.	1877
Mead, M. L.	Brooklyn Village	1875
Merrill, A. E.	Vermillion	1876
Merriman, C. R.	Akron	1882
Metzler, A. S.	Buena Vista	1874
Mills, J. T.	Jersey	1878
Miller, A. C.	Cleveland	1858
Miller, C. A.	Cincinnati	1871
Millikin, Dan.	Hamilton	1879
Montgomery, H. B. B.	Gilboa	1881
Moore, A. C.	Amelia	1869
Moore, C. H.	Hardin	1879
Moore, D. D.	Xenia	1879
Moore, Eugene L.	Pittsburg, Pa.	1868
Moore, F. P.	New Lisbon	1880
Moore, J. L.	Moscow	1879
Moore, James	Ironton	1872
Moore, L. G.	Kinsman	1878
Moore, William	New Lisbon	1865
Morgan, Chas. L.	Westfield	1880
Morris, Jonathan	Ironton	1853
Morris, Joseph	Columbus Grove	1879
Mory, J. J.	St. Henry	1871
Mounts, J. L.	Morrow	1860
Murbach, A. J.	Archibald	1874
Murphy, J. A.	Cincinnati	1872
Murray, L. S.	Medina	1870
Muscroft, C. S.	Cincinnati	1854
Myers, Benjamin	Ashland	1874
Myers, J. N.	Shelby	1881
Nash, W. H. H.	Columbus	1874
Nau, J. G.	Carroll	1878
Neal, T. L.	Dayton	1863
Neil, Alexander	Columbus	1868
Nelson, H. W.	Steubenville	1878
Newman, J. E.	Gilboa	1880
Nolen, J. G.	Toledo	1874
Norman, Frank	Columbus	1873
Norris, T. B.	Alton	1882

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Ousley, J. B	Jacksonburg	1871
Paige, W. N.	Johnstown	1878
Palmer, C. D.	Cincinnati	1871
Patterson, A. V	Mansfield	1861
Pearce, Enoch Jr	Steubenville	1859
Pearce, H. C	Urbana	1867
Perrier, John	Cleveland	1880
Pickard, P.	Mt. Vernon.	1878
Pixley, M. S	Portsmouth	1873
Pomerene, P. P	Berlin	1870
Pomeroy, O	Chardon	1869
Pope, L	Port Clinton	1875
Powell, W. S	Defiance	1881
Pratt, E. B	Mt. Sterling	1869
Prentice, O	Monroeville	1880
Preston, J. C	Cleveland	1857
Price, Joseph	Randolph	1852
Priest, S. C	Newark	1878
Primrose, J. P.	Nelsonville	1872
Pullen, G. W	Logan	1864
Quinn, A. T.	Wilmington	1881
Rabe, B. A	Cleveland	1880
Rankin, T. W	Kirkersville	1881
Ranney, S. W	Hope	1878
Ransohoff, Joseph	Cincinnati	1879
Reamy, T. A	Cincinnati	1855
Reed, A. N	Norwalk	1870
Reed, C. H	Toledo	1873
Reed, C. A. L	Hamilton	1881
Reed, J. T	Massillon.	1875
Reed, E. J	Leipsic	1878
Reed, R. C. S	Jones' Station	1867
Reed, Wm	Iberia	1865
Reeve, J. C	Dayton	1861
Rezner, W. B	Cleveland	1880
Rice, J. B	Fremont	1868
Rice, Robt. H	Fremont	1880
Ricketts, B. M	Ironton	1882
Ridenour, W. T	Toledo	1870
Ridgway, N. B	Galion	1878

NAME.	P. O. ADDRESS.	ADMITTED.
Riggs, J. U	Bryan	1873
Robinson, J. D	Wooster	1856
Rodgers, J. H	Springfield	1859
Rodgers, J. G	New Richmond	1873
Rosenfeldt, A	Cincinnati	1881
Rosenwasser, M	Cleveland	1880
Ross, W. M	Millersburg	1882
Row, G. T	Circleville	1881
Russ, R. C	Hillsboro	1880
Russell, E. S	Tuscarawas	1840
Russell, J. W	Mt. Vernon	1848
Sadler, J	Columbus	1878
Sabine, A	Marysville	1882
Sayer, J	North Washington	1882
Sapp, C. E	Gambier	1881
Sattler, Robert	Cincinnati	1872
Saunders, H	Oxford	1879
Saylor, Wm	Gratis	1871
Scarf, W. D	Bellefontaine	1855
Schuetzler, H. M	Toledo	1874
Schueller, J. B	Columbus	1869
Schwan, F. W	Poplar	1880
Scott, Annie K	Cleveland	1880
Scott, W. A	Swanton	1878
Scott, W. J	Cleveland	1855
Scott, Xenophon C	Cleveland	1874
Scoville, S. S	Lebanon	1859
Seely, W. W	Cincinnati	1871
Senseman, H	Tremont City	1871
Severance, R. A	Bellevue	1874
Shackleton, E. L	Auburn, California	1871
Sharp, H. J	London	1882
Sheldon, S. B	Five Mile	1882
Shepherd, W. W	Hillsboro	1871
Shoemaker, J. M	Napoleon	1869
Sidwell, N. H	Wilmington	1871
Silver, D. R	Sidney	1870
Sinnett, E	Granville	1850
Skinner, S. W	Toledo	1881
Slocum, C. E	Defiance	1874
Smith, D. B	Cleveland	1870

NAMES.	P. O. ADDRESS.	ADMITTED.
Smith, H. L.	Bloomingburg	1878
Smith, S. H.	Mecca	1880
Snodgrass J.	Kenton	1878
Snyder, C.	West Jefferson	1881
Snyder, D. J.	Scio	1850
Snyder, S. P.	New Bedford	1882
Souders, Samuel	Dayton	1879
Southard, J. M.	Marysville	1860
Southard, J. Q.	Raymond	1882
Speer, A. T.	Newark	1878
Spees, S. J.	Hillsboro	1863
Spooner, H. R.	Republic	1880
Sprague, James	London	1866
Stanley, E.	Sandusky	1870
Stark, W.	Cincinnati	1871
Stansell, J. A.	Forest	1866
Starch, A. B.	Milan	1880
Steeley, E. A.	Anna	1877
Stephenson, J. H.	Leesville	1860
Stevens, E. B.	Lebanon	1853
Steward, S. H.	Columbus	1869
Stewart, C. A	Lynchburg	1879
Stewart, T. H.	Church Hill	1877
Stillwell, Thomas	Fremont	1857
Stockton, Geo.	Columbus	1881
Stouffer, C. C.	West Salem	1878
Strain, A. J.	London	1881
Sturgeon, S. H.	Ada	1882
Sweney, R. L.	Marion	1859
Sylvester, J. E.	McArthur	1881
Tauber, B.	Cincinnati	1876
Taylor, W. H.	Cincinnati	1874
Thacker, L. G.	Defiance	1881
Thompson, J. B.	Columbus	1846
Thompson, J. C.	South Bloomfield	1848
Thompson, J. T.	Rollersville	1881
Thompson, W. R.	Vandalia	1871
Thorn, E. J.	Yellow Springs	1878
Thorn, S. S.	Toledo	1873
Tichnor, E. J.	Lebanon	1869
Tipton, T. C.	Williamport	1878

NAMES.	P. O. ADDRESS.	ADMITTED.
Tobey, H. A.	Dayton	1878
Todd, Frank H.	Painesville	1880
Townsend, Clark	Cleveland	1880
Trimble, R. T.	New Vienna	1881
Turney, Joseph	Nevada	1864
Underhill, J. W.	Cincinnati	1874
Underwood, A.	London	1869
Underwood, W. J.	Akron	1869
Vail, D. W.	New Haven	1874
Vanatta, E.	Fultonham	1855
Vance, R. A.	Cleveland	1881
Vandervort, J. W.	Harveysburg	1864
Vickers, G. W.	Wapakoneta	1882
Voorhees, S. R.	Mason	1873
Waggoner, Joseph	Ravenna	1870
Walker, A. B.	Canton	1882
Wallace, John	Rushsylvania	1879
Wallace, J. P.	Bellefontaine	1879
Walton, Geo. E.	Cincinnati	1871
Ward, C. S.	Warren	1875
Ward, W. A.	Conneaut	1880
Warner, A. D.	Fullerton	1880
Warren, Sara J.	Cleveland	1880
Watson, D.	Bellefontaine	1882
Weaver, J. M.	Dayton	1865
Webster, E. W.	Kingsville	1876
Weed, F. J.	Cleveland	1870
Weed, T. A.	Cleveland	1880
Welsh, J. M.	Deersville	1873
Wellons, G. S.	Barnesville	1878
West, T. J.	Melmore	1875
Whistler, H.	New Market	1881
Whitmar, Joel E.	Mt. Hope	1874
Whittaker, J. T.	Cincinnati	1871
Wiggins, C. W.	Big Plain	1869
Wilbur, A. M.	West Unity	1874
Wilkins, John A.	Delta	1874
Wilson, D. C.	Ironton	1872
Wilson, J. L.	Greenfield	1871
Willson, W. H.	Greenfield	1865
Williams, A. S.	Fostoria	1852

NAMES.	P. O. ADDRESS.	ADMITTED.
Williams, E.	Cincinnati	1856
Williams, J. L.	Cardington	1878
Williams, M. L.	Vienna	1880
Winslow, J. W.	Spring Mountain	1881
Wirth, R.	Columbus	1865
Wise, D. B.	Mt. Eaton	1881
Wise, S. P.	Millersburg	1875
Woods, D. B.	Warren	1852
Woods, J. T.	Toledo	1862
Wood, J. S.	Collinswood	1880
Woodruff, L.	Alton	1867
Woods, J. R.	Warren	1871
Woodward, W. R	Cincinnati	1871
Wright, S. St. J	Tallmadge	1880
Wylie, A. N.	Ripley	1866
Wylie, J. L.	Ripley	1872
Yost, W. N.	Mt. Blanchard	1879
Zenner, Philip.	Cincinnati	1882

[The following names were received from the Treasurer too late for insertion in their proper places.]

Brook, G. W.	Ellsworth	1858
Hughes, M. A.	Port Clinton	1877
Larimore, F. C.	Mt. Vernon	1871
Morse, D. A.	Oxford Retreat	1868

HONORARY MEMBERS.

W. M. Awl,* M. D., Columbus.
M. J. Bailey, M. D., New York City.
J. A. Brewster, M. D., Lawrenceburg, Indiana.
J. D. Blackburn, M. D., Covington, Kentucky.
G. W. Bœrstler,* M. D., Lancaster.
P. Beeman, M. D., Sidney.
Wm. Brodie, ex-President Michigan State Medical Society, Detroit.
Professor H. H. Childs, Pittsfield, Massachusetts.
H. Conant, M. D., Maumee City.
G. B. Guthrie, M. D., New York City.
M. M. Harding, M. D. Lawrenceburg, Indiana.
J. L. Hayes,* M. D., Philadelphia, Pa.
R. E. Houghton, M. D., Richmond, Ind.
S. P. Hunt, M. D., Sterling, Illinois.
G. S. B. Hempstead, M. D., Portsmouth.
E. W. Jenks, ex-President Michigan State Medical Society, Chicago, Illinois.
Professor J. Knight, New Haven, Connecticut.
J. W. Kitchen, M. D., Indianapolis, Indiana.
Jared P. Kirtland,* Cleveland.
John Kerr, Canton, China.
Professor Charles A. Lee,* New York City.
W. B. Lyons, M. D., Huntington, Indiana.
R. R. McIlvaine,* M. D., New York City.
Professor R. D. Mussey,* Cincinnati.
J. F. Noyes, Delegate, Michigan State Medical Society.
Professor Willard Parker, New York City.
J. M. Stevenson, M. D., Pennsylvania.
H. K. Steele, M. D., Denver, Colorado.
George Sutton, M. D., Aurora, Indiana.
Professor Wm. Tulley,* New Haven, Connecticut.
Robert Thompson,* M. D., Columbus.
E. L. Hill, Oxford.
Wm. Trevitt,* Columbus.
L. W. Moe, Ottawa.
Richard Gundry, Catonsville, Maryland.
Roberts Bartholow, Philadelphia, Pa.

*Deceased.

HONORARY AND CORRESPONDING MEMBERS.

Professor Ferdinand Hebra, Vienna, Austria.

Professor Isidore Neumann, Vienna, Austria.

Professor Herman Widerhofer, Vienna, Austria.

Professor Carl Sigmund, Vienna, Austria.

Professor Hermann Zeissl, Vienna, Austria.

Professor Ed. C. Seaton, Medical Inspector of the Privy Council, London, England.

Professor M. Jules Guerin, Member Imperial Academy of Medicine, Paris, France.

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NOTE.

The programme of exercises for the next session of the Society will be arranged by the proper officers, and announced by circular in due time.

Delegates to the American Medical Association, and to other State Societies, will receive their certificates of delegateship by mail.

CONSTITUTION AND BY-LAWS

OF THE

OHIO STATE MEDICAL SOCIETY.

ADOPTED AT COLUMBUS, OHIO, JUNE 14, 1882.

ARTICLE I.

TITLE OF THE SOCIETY.

The name of this Association shall be "THE OHIO STATE MEDICAL SOCIETY."

ARTICLE II.

OBJECTS OF THE SOCIETY.

The objects of this Society shall be the advancement of medical knowledge; the elevation of professional character; the protection of the professional interests of its members; the extension of the bounds of medical science; and the promotion of all measures adapted to the relief of the suffering, the improvement of the health, and the protection of the lives of the community.

ARTICLE III.

MEMBERS OF THE SOCIETY.

SEC. 1. The Society shall consist of Delegates, Permanent Members and Honorary Members.

SEC. 2. Delegates shall receive their appointments from the county, or other local, Societies: *Provided*, however,

that the officers of these Societies and the Chairmen of all committees who have reports to present, shall be Delegates *ex-officio*.

SEC. 3. Delegates from other States and foreign Societies, before admission to a seat in this Society, shall produce a certificate of delegation, signed by the President or Secretary of their Society.

SEC. 4. Delegates from Auxiliary Societies, before admission to a seat in this Society, shall produce a certificate of delegation, signed by the President or Secretary of their Society, and shall, after having complied with the requirements or provisions of Sec. 5, Art. III., become Permanent Members of the Society.

SEC. 5. Permanent Members shall be regular practitioners of medicine in the State of Ohio, shall be graduates of a medical college in good standing, shall be members of a county or district Society where they reside, and their election shall require a majority vote at a regular meeting, their eligibility having been previously reported upon favorably by the Committee on Admissions. Every applicant for permanent membership shall deposit with the Treasurer the sum of $3.00 as a membership fee, and also the dues for the current year (which sums shall be returned to him if his application is rejected). Permanent members alone shall transact the legislative business of the Society. Permanent members who may remove from this State shall, upon their request, be styled Non-resident Permanent Members, and shall, without payment of dues, be entitled to all the rights and privileges of Honorary Members. Non-payment of dues for three years shall work a forfeiture of membership.

SEC. 6. The Society may elect eminent physicians as Honorary Members. Those elected in any year shall not exceed six.

SEC. 7. Honorary Members, and invited guests, shall have the privileges of a seat at the meetings, of presenting papers, and of taking part in the discussions, but they shall not vote on any question, nor be eligible to any office. Papers read by them require a special vote, by the Society, of reference to the Committee on Publication, in order to appear in the published Transactions.

SEC. 8. The names of all Permanent Members in good standing, and of all Honorary Members, shall be published annually in the Transactions.

ARTICLE IV.

AUXILIARY SOCIETIES.

SEC. 1. Any county, or other local, medical Society, whose constitution embraces the objects of this Constitution and the Code of Ethics of the American Medical Association, may, upon application, become auxiliary to this Society, and shall be entitled to one delegate for every five members, and one for every additional fraction of more than half that number.

SEC. 2. Every auxiliary Society shall enforce the observance by its members of the Code of Ethics adopted by this Society; and shall be authorized to censure, suspend, or expel any member convicted of violating its provisions.

SEC. 3. Any member of an auxiliary Society who shall feel aggrieved at the action of such Society in enforcing discipline among the members, shall have the right to appeal to this Society.

SEC. 4. The Secretary of each auxiliary Society, not less than one month preceding each annual meeting of this Society, shall make a full and correct catalogue, with post-office address, of its officers and members in good standing at that time, together with a certified list of its Delegates, and transmit the same at once to the Secretary of this Society. If the name of a member is omitted from this catalogue that was contained in the last preceding catalogue, the Secretary must explain the omission by stating whether the member, whose name is omitted, is dead, has withdrawn, has removed, been expelled, or suspended. Any auxiliary Society that fails to comply with this requirement shall be held to be in contempt, and none of its members shall be allowed to participate in the business of this Society, or be entitled to any of its rights or privileges, until such Society shall have purged itself of the contempt.

SEC. 5. In case of the death of any of its members, who are also members of this Society, it shall be the duty of the Secretary of each auxiliary Society to transmit to the Secretary of this Society a suitable obituary notice for publication.

ARTICLE V.

OFFICERS.

SEC. 1. The officers of this Society shall be a President, four Vice-Presidents, Secretary, Assistant Secretary, and a Treasurer and Librarian.

SEC. 2. The officers shall be elected by a ballot vote of a majority of all the members present, shall enter upon their duties at the close of the meeting at which they were elected, and shall serve one year, or until their successors are elected.

SEC. 3. All vacancies in office, occurring in the interim of the meetings, shall be filled by appointment of the President.

ARTICLE VI.

DUTIES OF OFFICERS.

SEC. 1. The President shall preside over the meetings, preserve order, call meetings when in his judgment the interest of the Society may require, deliver an address, and perform such other duties as custom and parliamentary usage may require.

SEC. 2. The Vice-Presidents shall assist the President in the performance of his duties, and, in his absence, preside over the meetings, in the order of their seniority.

SEC. 3. The Secretary shall keep correct minutes of the proceedings of the Society, and prepare and furnish the same to the Committee on Publication, for publication in the Transactions, notify Committees and Society Delegates of their appointment, take charge of all manuscripts, papers, etc., read at the various meetings, and transfer the same to the Committee on Publication for publication; give due notice of the annual meetings, conduct all business correspondence, give official notice to all auxiliary Societies of resolutions, &c., passed by this Society that have reference to the said Societies, and also notify them of the time for making their reports to this Society, and perform all other duties which the common usage of other corporate or organized bodies may require. His salary shall be $75 per annum.

SEC. 4. The Assistant Secretary shall assist the Secretary in the performance of his duties as the latter may require, and act for him in his absence. His traveling and hotel expenses shall be borne by the Society.

SEC. 5. The Treasurer and Librarian shall receive all moneys due the Society, pay all bills countersigned by the Secretary, keep a correct, itemized account of all receipts and expenditures, with all vouchers, and make a full report of the same at each annual meeting. He shall have charge

of all the books, manuscripts (not specially belonging to the Secretary), instruments, specimens, preparations, and other scientific property belonging to the Society, keeping a complete catalogue of the same, and report the condition of this department at the annual meeting. He shall give bond for the faithful performance of his duties, in the sum of twice the amount of money in his possession, with two sureties, said bond to be deposited with the Secretary. His salary shall be $75 per annum.

SEC. 6. The officers shall deliver all records, books, funds and other property belonging to their several offices, to their successors, when the latter shall enter upon the discharge of their respective duties.

ARTICLE VII.

COMMITTEES.

The Committees of this Society shall be Standing and Temporary. Standing Committees are those whose duties continue from year to year. They shall each consist of five members, and, unless otherwise specified, shall be elected by the Society, one member being elected each year, except the first year, when one member shall be elected for five years, one for four, one for three, one for two, and one for one year. The Standing Committees shall be: Committees on Arrangements, Finance, Admissions and Medical Societies, Ethics, Publication, and Medical Legislation. Temporary Committees are those whose functions cease with the meeting at which they are appointed. They shall be appointed by the President, as the necessity for their existence arises.

ARTICLE VIII.

STANDING COMMITTEES AND THEIR DUTIES.

SEC. 1. The Committee on Arrangements shall, if no sufficient reason prevent, be mainly composed of members at the place where the next annual meeting is to be held. It shall provide suitable rooms and accommodations for the meeting, and, in all matters not otherwise provided for, superintend and protect the general interests of the Society. This Committee shall be appointed annually by the President.

SEC. 2. The Committee on Finance shall superintend the monetary affairs of the Society, inspect and audit all

bills and accounts of the Treasurer, examine and determine the amount, and make such assessment, by a *pro rata* tax upon the Permanent Members, as may be necessary for incidental expenses, and perform such other duties as may devolve upon it.

SEC. 3. The Committee on Admissions and Medical Societies shall examine and pass upon the qualifications of Delegates, and the applications for admission of auxiliary Societies, and perform such other duties as may devolve upon it.

SEC. 4. The Committee on Ethics shall examine and report for the action of the Society, all cases of appeal from the auxiliary Societies, and such other matters as may be referred to it by the Society. If any member shall be charged, in writing, with any violation of the provisions of this Constitution and By-Laws, or with unprofessional conduct, a copy of such charge shall be furnished to him by the Secretary, and himself and accuser cited to appear, when the Committee shall proceed to hear the case, reserving its decision to be reported to the Society; except that any case may be referred to an auxiliary Society for adjudication, and from the decision of the auxiliary Society an appeal may be carried to this Society. Reports from this Committee, when unanimous, shall be acted upon without debate.

SEC. 5. The Committee on Publication, of which the President and Secretary shall be members *ex-officio*, shall examine all papers presented to the Society, and have printed in the Transactions such as it deems worthy of publication.

SEC. 6. The Committee on Legislation shall watch the course of State legislation on medical subjects, and take charge of such matters as shall be referred to it by the Society. All proposed legislation offered by any member of this Society, and all resolutions touching medical legislation, shall be referred to this committee, which shall make a report thereon to this Society as soon as possible. It shall also, at each annual meeting, report to the Society any laws relating to medical matters that may have been passed within the year.

SEC. 7. The Standing Committees shall keep regular minutes of their proceedings, and furnish an authenticated copy thereof, to be deposited with the Librarian.

ARTICLE IX.

DELEGATES.

SEC. 1. The Delegates appointed by this Society to the American Medical Association or to other Societies, shall report briefly, in writing, through their Chairmen, such items of general interest as may have claimed the attention of the bodies to which they were respectively delegated.

ARTICLE X.

MEETINGS.

SEC. 1. The meetings of this Society shall be annual, and shall occur at such time and place as the Society may appoint. Provided, that special meetings may be called at any time by the President, and shall be so called by him on the written request of twenty-five members. Due notice of all the meetings shall be given by the Secretary, and in case of a special meeting the object for calling said meeting shall be distinctly set forth in the notice.

SEC. 2. Fifteen Permanent Members shall constitute a quorum for the transaction of business.

ARTICLE XI.

CODE OF ETHICS.

The Society adopts, as a part of its regulations, the Code of Ethics of the American Medical Association.

ARTICLE XII.

AMENDMENTS.

Every proposal for amending the Constitution shall be made in writing; and, if such amendment receive a majority of four-fifths of the Permanent Members present, it shall be adopted; but otherwise, the amendment shall lie over until the next meeting, when it may be adopted by a majority of two-thirds of the Permanent Members present.

ARTICLE XIII.

Nothing in this Constitution shall be so construed as to deprive any one now a member of this Society, of any rights or privileges held by him before the adoption of this Constitution, unless voluntarily surrendered by him.

BY-LAWS.

I.

ORDER OF BUSINESS.

1. The President, or, in his absence, one of the Vice-Presidents, shall call to order; or, in case of the absence of all these officers, a chairman shall be appointed *pro tempore.*
2. Reading of minutes. Report of the Committee of Arrangements (on first day).
3. President's address (afternoon of second day).
4. Election of officers (afternoon of second day).
5. Selection of a place for the next meeting (afternoon of second day).
6. Business which requires early consideration.
7. Reports of Standing Committees.
8. Reports from Delegates to the American Medical Association, and other Societies.
9. Written communications on medical subjects (papers).
10. Oral communications.
11. New business.
12. Unfinished and miscellaneous business.
13. Adjournment.

II.

In filling blanks, the longest time and the largest sum shall be first put.

III.

Any three Permanent Members may call for the ayes and noes.

IV.

All questions of order, not especially provided for, shall be decided according to Cushing's Manual of Parliamentary Practice.

V.

Not to exceed thirty minutes shall be allowed for the reading of any paper.

VI.

No paper shall occupy over thirty pages of the Transactions.

VII.

All reports, papers and addresses presented to this Society by its members are the property of the Society, and shall be referred, without motion and without recommendation, to the appropriate committee; and it shall be considered a misdemeanor for the author of any such report or paper to permit the same to be published except as authorized by special vote of the committee or the Society.

VIII.

No speaker shall be allowed to speak a second time, on the same subject, without the consent of the Society.

IX.

The time allowed each speaker shall not exceed ten minutes, except by general consent.

X.

The motion to adjourn, to lie on the table, or for the previous question, shall be decided without debate.

XI.

The motion for the Previous Question, if decided in the negative, shall have no effect on the main question.

XII.

Any of these by-laws may be suspended at any time by a three-fourths vote of the Permanent Members present. Every proposed amendment must be offered in writing; if it receive a four fifths vote of the Permanent Members present, it shall be adopted; but otherwise it shall lie over until the next meeting, when it may be adopted by a majority of two-thirds of the Permanent Members present.